

Lectures on Practical Mining in Germany.

CLAUSTHAL MINING SCHOOL NOTES—No. LIII.*

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SECTION III.

From the table given in our last it will be seen that the 200 ft. driven by hand occupied 13½ months, giving an average of 15 ft. advance per month. The machine boring occupied six months giving an advance of 38 ft. per month, or 2½ times as fast. It must be mentioned, however, that as the carriage in this first construction of Sach's did not allow of boring by the machine in the floor, the boring in the floor was done the whole time by hand. The rock was a quartzose grauwacke, or slate, with occasional milder strata. There were always two machines at work at the same time. In July, 1864, when the machine was got into proper order, an advance of 16 ft. 8 in. in the week was twice obtained as the best result. During the first half of the month an advance of 30 ft. was made; during the second, in consequence of meeting with a quartz bank, which let in very considerable quantities of water, the advance made was only 20 ft. In August, when the calamine deposit was approached, the rock became much milder. All circumstances being considered, the advance may be said to have been at the least twice as fast with the machine as by hand. Each machine had two attendants, but until the miners had become more accustomed to them a mechanic was added, who also attended to the repairing, &c., of the machines, so that there were always five men and two machines before the end face. The shifts were at the commencement eight hours, but as the level became exceedingly wet they were increased in number to four of six hours each. During the twelve night hours the hand boring in the floor of the level took place, the machine boring taking place during the day time. As a rule four holes, each under 15 in. deep, were bored and fired by the miners in a shift of six hours; with the machine from six to eight holes, of a depth varying between 17 and 36 in., were repeatedly bored and fired and the debris cleared in the same time.

The financial result is greatly influenced by the fact that the machines were at work for comparatively so short a time, and the necessary improvements and alterations before the machines were got properly to work. According to the table the cost per foot advance with hand was 2s. 11s. 4d., and with machine boring only 1s. 15s. 3d. The cost during the first five months that the machine was working through the hardest rock through an advance of 166 ft. corresponding to 9486 cubic feet, was as follows:—

Miners' wages.....	£345 5 10
Mechanics' and surface wages.....	37 10 0
Powder, fuse, &c.....	31 0 0
Air compressor.....	4 17 6
Total.....	£418 13 4

From which we obtain 1s. 4s. as the cost per cubic yard of the rock won, whilst the cost per cubic yard with hand boring amounted to 1s. 13s. 4d.

The smaller machine, designed to be used with a pressure of two or more atmospheres, has since been much improved by Sach, and its improved construction extensively used in Germany. In this construction the arrangement for imparting a rocking motion to the cross pin is somewhat different. Instead of the cross head a small hinge is bolted to the end of the back piston rod, and attached to this hinge is a long pin, which passes through a long hollow cylindrical socket, forming one of the arms of the rocking pin. Only the ratchet wheel, which imparts a gradual rotatory motion to the borer, is centred on the piston rod, the ratchet wheel for producing a gradual forward feed of the machine is centred directly on the long round screwed bar, forming part of the frame. The backward motion of the machine can be effected by a handle, through the intervention of a pair of bevil wheels, one of which is centred on the nut and attached to it; the other, which is at right angles, is centred on a strong pin screwed into the lug which contains the nut. In still later constructions Sach made the nuts in two halves, connected with a hinge, so that when it was desired to withdraw the cylinder in order to insert a fresh borer, it was only necessary to open the nut and slide the machine back by hand.

The disposition of the drill on the carriage, and its weight, was perhaps the greatest disadvantage connected with the first of Sach's machines. For the purpose of removing this objection a different arrangement of the carriage was designed by Döring. This consists of a cast-iron bed plate, which is fixed upon four wheels; to the front end of this bed plate a strong column, with grooves turned in it, which serve the purpose of a rack; the top of the column is bolted to a short cross piece of angle iron, and besides wedged tight against the top of the drift, or level. The short cross piece is rivetted at the top to two back pieces of angle iron, which pass backwards to two uprights of angle iron. The column is clamped by a cast-iron muff, and when not tightened by screws can be slid up and down the column by means of a worm wheel and a small screw, the arrangement being exactly the same as that found in many drilling machines. A second muff is cast in the same piece with the first, but at right angles to it, and through this a round bar passes, which can be rotated about its axis. The arrangement by which this bar can be pushed forward or backward through this second muff is exactly the same as that by which the first muff can be raised or lowered. This bar carries at its end a ring, on which a forked arrangement for carrying the drill rests, and about which it can be rotated as a centre. By this means the drill can be raised or lowered in a vertical plane, and pushed backwards or forwards in a horizontal plane, and since the bar can be moved about its axis the machine can be placed in any position or at any inclination desired.

For sinking purposes the drill has a very simple frame arrangement. The two ends of the bars forming the frame are connected with a semicircular cross piece with two lugs, on to which the ends of the round bar are clamped; the lower cross piece has two short bars, or pins, bolted to it, and which rest on the ground; the cross piece at the top has a hinge formed on it, by which a long leg, or bar, is attached, and which can be lengthened or shortened. By means of a short chain hung from the upper cross piece several heavy weights can be suspended to steady the machine. Many of the workmen find it more convenient to dispense with the use of the back leg, and by leaning against the top of the machine, and grasping the short wooden handles fixed to the top cross piece, they can hold the machine sufficiently steady, and fix it almost instantaneously in any desired position.

The Universal Standard designed by the Humboldt Actiengesellschaft is one of the best arrangements that has been devised on the Continent for fixing boring machines when driving levels, drifts, and cross-cuts. It consists of a strong round standard, bolted down to a cast-iron plate, which runs upon four wheels on an ordinary 2 ft. gauge line of rails. The standard is turned with a number of square-shaped rings on its surface, as in the case of the carriage designed by Döring. A muff embraces the standard, and can be raised or lowered on the standard in a similar manner, the whole arrangement, except the carriage, being very similar to Döring's. The top of the standard is hollow, and is tapped, a long strong screw fitting in the upper end; by the means of one or two cross handles passing through holes drilled in the screw the latter can be screwed so far out as to bind pretty tightly against the top of the level, fixing the frame firmly and securely. With this frame not more than 5 or 6 minutes are required by the workmen for fixing the drill in any desired position.

One of the boring machines which has in an improved form come into very extensive use is that devised as early as 1865, and afterwards exhibited by the inventor, Haupt, in the Paris Exhibition of 1867. Haupt's machine was designed to be driven by steam, which

was generated in a small portable boiler, fixed in the mine itself, the exhaust steam being carried off with the return air current by means of a fan. The frame for the machines consisted of two or more round iron columns, which by the means of screws could be tightened against the roof, the lower ends of the columns being attached to a strong cross piece, which was fixed to a set of three legs. This cross piece is hollow, and divided in the middle by a cross casting, the one side serving as the inlet for the steam to the machine, and to which the steam pipes are attached, the other serving as the outlet for the exhaust steam. The drill can be placed at any inclination in a vertical plane, and moved through 90° in a horizontal plane. The machine itself is about 30 in. long, weighing about 140 lbs. The cylinder is about 4 in. long and 4 in. diameter, and at a pressure of 4 atmospheres makes from 350 to 400 blows per minute, giving a piston velocity of from 4 to 5 ft. per second. The piston rod is about 2½ in. in diameter, so that the total pressure during the forward stroke which strikes the blow is much greater than that during the return stroke, and is besides hollow, so that the borer can be inserted from behind, and changed for a fresh one when the first has become blunted, without having to withdraw the cylinder. The balanced slide valve consists of a circular tube, that fits tight against the sides of the cylindrical valve chest by means of four well fitting rings. The valve spindle, which passes through the cylindrical valve, is not rigidly connected to the valve but in the following manner. Attached to the valve spindle within the valve is a small piston, and in both ends of the valve a large ring is screwed. On each side of the piston, and between it and the ring, is a strong spiral spring, which has been compressed by screwing in of the ring. By this arrangement the motion of the valve spindle or piston of the valve spindle is not communicated directly to the valve, but through the intervention of the springs, and consequently the reverse motion of the valve spindle is first participated in by the valve, when the tension of one of the springs is so much increased by compression as to overcome the inertia of the valve; and during the short interval thus required the piston rod of the main cylinder carrying the borer has time to complete its stroke before the steam enters in front of the piston to drive it back. The piston rod carries a short arm, which striking against an arrangement of catches and springs causes the reciprocating motion of the valve spindle. By means of this same arm and a ratchet wheel attached to the piston rod the latter is gradually rotated during every return stroke of the piston rod. By means of a spring and groove the borer is compelled to rotate with the piston rod; a catch prevents the borer slipping or rotating in the opposite direction within the piston rod. The cylinder is fixed so that the borer alone is pushed forward as the hole gets gradually deeper; this is effected by a screw and ratchet wheel, which is rotated by the return stroke of the piston rod. The drill of Haupt has been very extensively used in America, and notably so in the driving of the Housatonic Tunnel.

Soon after the invention of the Haupt rock-drill a Mr. McKean endeavoured to introduce it into England. The use of steam was a great disadvantage in connection with the Haupt drill, and the use of springs for driving the valve-gear is also objectionable in such high speed machines as the rock drill. After several years experience Mr. McKean introduced so many alterations and improvements in the Haupt drill as to produce an almost totally different machine, which has since been most extensively used in this country and abroad. In the McKean drill the cylinder, valve-chest, and frame for carrying the guides and bearings for the piston rod, valve-rod, and other parts of the machine are cast in one piece, which is nearly oval in cross sections. Within the valve-chest an accurately turned cylinder is fitted, which forms the valve seating and extends nearly the whole length of the cylinder. The admission ports in the valve seating extend nearly the whole length of the cylinder forming the valve seating, where, however, they enter the main cylinder they are of but a very small depth. The same device is made use of in this as in the other rock-drills we have noticed for cushioning—i.e., of having the admission ports situated at a short distance from the ends of the cylinder. The extension of the admission ports along the whole length of the cylinder forming the valve seating will lead to a considerable loss of steam or compressed air in clearance. The valve itself forms a hollow cylinder with its axis parallel to that of the main cylinder, and extends from one end of the valve-chest to the other; the front end is open and communicates with a pipe screwed into the end of the valve-chest forming the exhaust-pipe. The inside of this cylindrical valve, therefore, forms a portion of the exhaust-pipe, the steam or compressed air from the boiler or air-compressor occupying the annular space left between the valve and the valve seating. On one side of the valve extending the whole length of the valve is a projecting face curved to fit against the inside of the cylinder forming the valve seating. Extending nearly the whole length of this projection is a central slit communicating with the inside of the valve. By a partial reciprocating rotation of the valve about its axis it alternately uncovers (allowing the compressed-air to enter) and covers, preventing the entrance of compressed-air through the admission ports, and during the time that one of the admission ports is uncovered the other is opposite the long slit in the projecting part of the valve, and is thus in communication with the inside of the valve, and consequently with the exhaust-pipe. The action is exactly analogous to that of an ordinary slide-valve taking place on a concave instead of on a flat valve seating. The back end of the valve is solid, and has a groove cut diametrically across it. To the end of the valve spindle is a cylindrical shoulder turned to fit the circular valve seating perfectly steam-tight, and on the front (with respect to the machine) flat end of the shoulder is a projecting piece which fits in the groove in the back solid end of the valve. The back end of the valve chest is screwed into which a circular ring is screwed up against the shoulder on the valve spindle; not so tight, however, as to prevent the valve spindle and valve being readily rotated, but sufficiently so to prevent any excessive motion of the valve; the valve spindle passes through the circular ring, and bears in a round hole in the extreme back end of the casting forming the frame of the machine. By means of the above-mentioned groove in the solid end of the valve and the projecting piece on the shoulder of the valve spindle, the oscillating movement of the latter is imparted to the valve. The valve spindle is actuated by means of tappets which are attached to a sleeve fastened upon the valve spindle, and these are placed at such angle or inclination on each side of the central plane passing through the axes of the valve spindle and piston-rod that they are struck alternately by an enlargement formed on the piston-rod.

The piston-rod, which passes through both ends of the cylinder, and the piston are formed in one piece of steel. The piston has two broad grooves cut in it, in each of which a pair of metallic piston rings are inserted. The portion of the piston rod which passes through the front end of the cylinder and carries the borer is larger, and consequently stronger, as it ought to be than the portion of the piston rod passing through the back end of the cylinder, which thus gives a larger area, and consequently a greater pressure on the back end of the piston during the forward blow, than on the front end of the piston during the return stroke. The borer is keyed or cottered into the front end of the piston rod; the attachment may be made adjustable by means of a nut which fits on to the extreme end of the piston rod, which latter is screwed as far as the cotter hole. The face of the nut has a groove cut in it which, when the nut is screwed tight up, coincides with the cotter hole, so that when the cotter is driven in there is no possibility of the cotter shaking loose, and the borer is thus held always firmly and rigidly. A cross bit is the form of borer principally used.

The extreme end of the piston rod passing through the back end of the cylinder slides in a bearing formed in the end of the casting forming the frame of the drill. The piston rod is, therefore, supported in three places, and it is claimed for this machine that this arrangement gives greater steadiness during working, on account of the chief moving part being thus supported in three places along its length. This portion of the piston rod has an enlargement formed by two conical faces, and a straight piece between them, and it is by the striking of these conical faces the one against one of the tappets and the other against the other tappet that the oscillating motion of the valve spindle is caused. As these tappets on being unclamped can not only be slid backwards and forwards on

the valve spindle but also clamped at any inclination desired, it will be evident that by this arrangement the position and angle of the tappets can be adjusted at will to regulate the distribution of the steam or compressed air.

The straight portion of the enlargement between the conical surfaces on the back portion of the piston rod has ratchet teeth cut in it in an inclined or oblique direction. On a short spindle with its axis parallel to that of the piston rod is a grooved or fluted cylinder (which fits the teeth in the straight portion of the enlargement of the piston rod), and a small ratchet wheel having its motion checked in one direction by a pawl. During the forward stroke of the piston the teeth (on the enlargement of the piston rod) drive the fluted cylinder and spindle, the rotation being allowed by the small ratchet wheel; during the return stroke the pawl arrests the motion of the small ratchet wheel, and with it the spindle and fluted cylinder, the grooves on which and on the enlargement of the piston rod, being oblique, the piston rod is compelled to rotate slightly; the amount of rotation being such that for a complete rotation of the cutting tool 16 blows are required.

GEOLOGICAL SOCIETY OF LONDON.

Nov. 21—JOHN EVANS, F.R.S., D.C.L. (Vice President), in the chair.

Oswald Fitch, Highbury New Park; John Hadkinson, Brunswick-street, Liverpool; B. Holgate, engineer, Atkinson-street, Hunslet, Leeds; H. F. Parsons, M.D., Goolie, York-hire; and Edgar P. Rathbone, Duke of Norfolk's Nunnery Colliery offices, Sheffield, were elected Fellows of the society.—William Fream, B.Sc., Lond., Professor of Natural History in the Royal Agricultural College, Cirencester; J. G. Hochstatter Godfrey, late Chief Geologist and Mining Engineer to the Government of Japan, London; Herbert Goss, F.L.S., Surbiton Hill; Jenkin Jones Ingram, York-street, Lambeth; John Fowke Lancelot Rolleston, St. Peter's-terrace, Leicester; and Fred. Adolphus Alexander Simons, Manley-terrace, Kennington Park, were proposed as Fellows of the Society.—Isaac Bayly Balfour, M.B., D.Sc., Inverleith-row, Edinburgh; David Burns, Geological Survey of England, Jermyn-street; Samuel Cooke, M.A., Assoc. Inst. C.E., Professor of Chemistry and Geology, Poona Civil Engineering College, Bombay; Henry Drummond, Glen Elm Lodge, Stirling; Sandford Fleming, C.M.G., M. Inst. C.E., Durham Villas, Kensington; Rev. John Hodgson, M.A., Kinver, Staffordshire; Wm. Etheldred Jennings, B.A., School of Mines, Sydney, New South Wales; Henry Merryweather, Fairholme, Clapham; Robert Robinson, M. Inst. C.E., West-terrace, Darlington; Martin Stewart, B.A., York House, Wakefield; George Eastlake Thoms, Wolverhampton; Robert F. Tomes, Weston-on-Avon, Stratford-on-Avon; and Irwine John Whitty, M. Inst. C.E., of Giridhi, East Indian Railway, Bengal, will be balloted for as Fellows of the society.

The following communications were read:—

1.—"On the Glacial Deposits of West Cheshire, together with lists of the Fauna found in the Drift of Cheshire and adjoining Counties." By W. Shone, F.G.S.

2.—"The Moffat Series." By C. Lapworth, F.G.S.

The fossils found in the highly convoluted Lower Silurian rocks of the southern uplands of Scotland are usually restricted to certain narrow bands of black carbonaceous and graphitic shales, which, from their especial abundance in the neighbourhood of the town of Moffat, Dumfriesshire, are known to geologists as the Moffat shales, or Moffat series.

EXHIBITION OF THE CORNWALL MINING INSTITUTE.

So great was the success achieved by the first exhibition of the Cornwall Mining Institute that the Committee wisely determined to keep it open three days instead of two. The attendance was large, and the proceedings so well varied with concerts and addresses, including one from the President, Dr. Foster, as to be enjoyable to the general public as well as to the more practical visitors. We were unable last week to give the result of the trials of the rock drills, which took place on Friday, and which completed the task of the official committee of inspection. They were very interesting; the machines being tested on one of the hardest and toughest blocks of greenstone to be found in the district, provided by Capt. Hosking at South Roskear; but the results singularly bore out our anticipatory remarks of last week as to the unsatisfactory character of any mere working trial of this kind. Of the three machines worked, the Ingersoll and McKean did excellently, but the Barrow could not be "got to go"; and yet we all know not only that the Barrow is doing most admirable work at Dolcoath, but that it was the first boring machine found practically applicable to Cornish mining. The Beaumont did not put in an appearance, so that it is idle to speculate what its fate would have been. Like the Barrow, however, its value has been thoroughly proved in extended mining operations. Trials of this sort have their uses no doubt, but they need to be regarded with care. Many a machine may drive a few holes admirably that would be unsuited for general mining work; and here we find an excellent practical machine break down from some accidental cause at the test. Of course, under the circumstances, only the McKean and Ingersoll could be certificated. Some interesting experiments were made with dynamite by Capt. Chas. Thomas; and the electric blasting apparatus of Mr. Brain, which was shown by Mr. Cuthbertson, also had a certificate. Other certificates were awarded to Mr. Heath, of Plymouth, for his fine collection of microscopes, and to Mr. James, of Truro, for his crucibles and muffles. We append the Official Report of the trial of the borer:—

The drilling machine trials took place this afternoon at South Roskear Mine, where, thanks to the kindness of Mr. James Ho-king, the manager, an excellent arrangement had been made for carrying out the necessary experiments. The Ingersoll drill was first tried on a block of granite, with a tripod stand, and a hole 12 in. deep was bored in four minutes. This, however, was not considered a serious test, and Mr. Hosking provided a large block of greenstone, sunk into the ground to secure its steadiness, and supplied the necessary means of fixing the cross-bar for carrying each machine, and the McKean drill was the first to experiment on it. This machine is now in use in South Roskear Mine, and the drill now experimented with had been doing good duty until that morning underground. It was started at 2.41 P.M., and after working for nine minutes it was stopped, and the hole was found to be 7 in. deep. The borer was changed and the work recommenced at 2.53—that was to say, after an interval of three minutes. It would not take so long to change the borer in actual practice, but a little delay was caused by measuring the depth of the hole, and by persons pressing round to see the machine. After five minutes further boring the machine was stopped, and the hole was found to be 13 in. deep. The borer was again changed, and at 3.1 P.M. the drill started again, boring with a new bit till 3.7, when the hole was found to be 22 in. deep. An ordinary chisel bit was used, 2 in. wide. In all 22 in. were bored in twenty-six minutes, including six minutes for stoppages. The McKean drill is usually worked with an automatic feed, but it was noticed that the man in charge had to attend a good deal to the feed himself. Considering the hardness and fineness of the stuff, the result obtained was thought decidedly satisfactory.

The little Ingersoll was next fixed to the cross-bar, and began work at 3.20 P.M., and stopped at 3.23 P.M., when it was found that 4 inches had been bored. The borer was changed, and the machine started at 3.24, and worked till 3.30. The hole was then 14½ in. deep. The drill had then bored 10½ in. in very hard and tough greenstone in six minutes. Unfortunately, there was not a third borer to fit in the hole, which could not, therefore, be carried deeper. However, the result of the trial was eminently satisfactory, 14½ in. having been bored in ten minutes, including stoppages. The persons present were much pleased with the Ingersoll drill. The feed was perfectly automatic, and the man in charge had not to touch the machine, but merely look on and see it do its work. A cross-bit, sometimes called a diamond-bit, was used. The last trial was made with the Barrow drill, but unfortunately, owing to want of sufficient preparations on the part of the exhibitors, this excellent drill did not do good work. Its performance at Dolcoath for more than a year has been so remarkable, both as regards the speed of driving and economy of working, that its want of success at South Roskear must not be

* Being Notes on a Course of Lectures on Mining, delivered by Herr Berggrath, Dr. von GROSSECK, Director of the Royal Bergakademie, Clausthal, The Harz, North Germany.

scribed to any fault of the machine, which is the simplest of all that has been exhibited here.

After the boring machine trials Capt. Charles Thomas, the well-known instructor for the Dynamite Company, showed some electrical blasting. A charge of dynamite was placed under a huge block of granite or natural rock in the middle of a large field, and insulated wires were carried from the charge to a house a considerable distance off. Then the wires were connected with Brain's blasting apparatus, and a mere turn of the handle sufficed to cause the explosion. The block of stone was rent into a thousand fragments, and huge pieces were projected some 50 yards. A cloud of dust and earth was blown up, and a crater-like opening was left in the field, 4 or 5 ft. deep.

NATIONAL ASSOCIATION OF CERTIFICATED COLLIERY MANAGERS.

A meeting of the members of the above society was held on Saturday, at the Brunswick Hotel, Manchester, the chair being occupied by the President. A discussion took place with regard to the appointment of a working secretary for the Association, and several applications for the post which had been received were laid before the meeting and considered.—Mr. George H. Powell, of Birmingham, being ultimately selected for the appointment. The suggestion thrown out at a previous meeting that it would be desirable that meetings for the furtherance of the objects of the Association should be held in some of the central towns of the principal colliery districts, was next considered, and arrangements were made for holding meetings at Birmingham, Wigan, Wakefield, Newport (Mon.), Nottingham, Durham, Newcastle-upon-Tyne, and Whitehaven.

A discussion next took place with reference to the recent speeches of Mr. Alex. Macdonald, M.P., and Lord Kinnaird; and ultimately it was unanimously resolved that the members of that Association, who had been so long and so strenuously engaged in the cause of the miners, should be warmly and straightly thanked for the manner in which he had vindicated the rights and position of colliery managers, and also to the other correspondents in the trade journals, and to the Press throughout the United Kingdom, who had so fully demonstrated the fallacy of the advice given to the working colliers by one of the above-named agitators. It was also resolved that the above resolution should be communicated to Mr. John Brown, of Hedsnesford, and to the *Mining Journal* and *Colliery Guardian*. This concluding the ordinary business of the meeting, one or two matters with regard to colliery management were brought forward for consideration—the "endless chain" and the "self-acting incline" being discussed by the members, who expressed their opinions as to the economy and suitability of the three systems under varying conditions.

During the proceedings a paper was read by Mr. George H. Powell, of Birmingham, on "The Objects and Method of Organising the Association." The paper dealt principally with the question of organisation, and suggested that, in order successfully to attain the objects of the Association, it would be necessary to form a committee of colliery managers in every mining district of the United Kingdom, such committees to consist of those persons only who hold certificates of competency or of service under the regulations imposed by the recent Coal Mines Regulation Act. From such committees there would be annually elected representatives of the committee, who would form the council of the Association. The council would discuss at its meetings all important matters affecting the Association and mining interests in general; the council would also consider what steps should be taken to ensure a better system of education for those intended for responsible positions in the mining profession, and how such a system could best be attained, so as to place men of the highest practical and scientific attainments in the responsible management of mines, where such grave and serious responsibilities devolve on colliery managers. The Association proposes to establish funds for relief of families of members meeting with accident resulting in death, and for granting annuities to such as attain an age at which they cannot follow their employment. Further, the Association would seek to protect its members against such unwarranted attacks as have of late been heard in the northern and other provinces. The Association is not established to harass, or in any way to interfere with, any private arrangement between master and servant, or in the slightest degree to interrupt the good relations existing between managers and their employers, but to further the interests of each, which are always identical. The paper was comprehensive and exhaustive, dealing with the details of the organisation, and was listened to with great interest.—It was unanimously resolved to adopt the organisation as suggested.

The thanks of the meeting were given to Mr. Powell for his paper.

THE BLANTYRE MINE EXPLOSION.

We have been requested to insert the following correspondence between Lord Kinnaird and Mr. Macdonald, M.P.:

MR. LORD.—I am quite at one with you as regards the fire-damp indicator. You will remember how much interest I took in it when exhibited. I believe its compulsory adoption would be of great benefit to the mineowners themselves. It being compulsory on all it would entail a hardship on none. Its prompt warnings of the presence of gas would prevent the miner descending to or entering where it was dangerous, and one only, I ever had against its adoption, was that men would not go down fiery mines at all if the indicator was in operation. It would make them always on the watch for it.

As to the forbidding of blasting and the use of naked lights in all mines, I agree with you that it would be hardly possible. There are hundreds of mines where to fire-damp exists, where blasting can be carried on and naked lights used with perfect safety. It would be folly to order that lamps should be used and firing prohibited in such cases. I have arrived at the conclusion, however, that where gas is there ought to be no blasting under any circumstances, and naked lights should be strictly prohibited, and the most thorough discipline maintained in the mine, as on this all depends.

It is true "blowers" are sometimes found, and as such they are a source of danger. It is to be observed, however, that they are never found but in fiery mines, and if the gas ordinarily in the mine was diluted and rendered harmless, and if safety lamps alone were used with the fire-damp indicator, disasters from "blowers" would be all but unknown. A careful study of the Mines Inspectors' reports enables me (if these reports are true) to state that notwithstanding all we have heard about "blowers," 2 per cent. of the explosions which have occurred in the last 25 years have not been caused by "blowers."

You state other preventive measures might be carried by taking advantage of public feeling. One preventive measure is absolutely necessary in all mines where fire-damp is known or suspected to exist—it is that the firemen shall be men of skill, of tried character, and good reputation. It is too common that this situation is filled by men utterly incompetent to properly do the work. Then again duties are imposed upon them which renders it impossible for them to do all that is necessary for their part for full protection of the workmen. And just let me say, the present form of inspection, as I see it, is a costly "farce" to the country. If mines are only to be visited when accidents occur, and a report of such accidents to be made, then I humbly submit that six, instead of 24, or all that is necessary, and their salaries should not exceed 300*l.* a year. One other thing is necessary to promote the full protection of the miners—that is, to throw on mineowners the necessity of keeping all those that are injured by the neglect of those in charge or who are carrying on the works for the owners in their mines, and to maintain the dependents of those killed. Were this made the law of England I feel certain that not one thousandth part of the disasters would take place that now do.

Your letter filled me with gladness when I received it, because it told me that you had not forgotten that class for which you did so much years and years ago. I can assure you that it will be read by thousands and tens of thousands of the mining population with heartfelt gratitude, because it conveys to them a knowledge that you, who stood by them as far back as 1853, still watch over their interests.

THE RIGHT HON. LORD KINNIRD, Rossie Priory.

ROSSIE PRIORY, Incheure, Nov. 24, 1877.

DEAR SIR.—I am pleased to find that with all your experience of the working of the Mine Regulation Act you are still of the opinion that we succeeded in getting the provisions we wished inserted in that Bill in its passage through Parliament that an immense saving of valuable lives would have been effected. I quite agree with all your suggestions for the safe working of the mines; indeed, as you may remember, the most, if not all, of them we endeavoured to carry, but under the difficulties we had to encounter we were glad to get the Bill through in the shape in which it ultimately became law.

I am not surprised at what you say that the present plan of inspection is a "farce." You will remember that at the time of the passing of the Bill we foretold that it would prove to be so, and something like my proposal, which was strongly urged, must be adopted, viz.—That the captain in metal mines, the agent or fireman in coal mines should, after his daily inspection, repair to the office on the surface, and enter his report in a register kept in the office, open to the Government Inspector, and indeed to all other men.

The absurdity of the fireman merely keeping a book for his own information is shown in the evidence given at the enquiry now going on as to the cause of the Blantyre explosion. How can any fireman, without the fire-damp indicator, tell

the amount of dangerous gas in any part of the mine? It is quite true, as you say, for I was often told it, as an objection to the fire-damp indicator, or to a report as to the state of the workings being entered at the surface office, "that the men would not go down if they knew their danger." Really, I would ask, why should they be allowed to go down and encounter danger, when, by the use of precautions, and, as you properly say, discipline being maintained, there would be no more danger than in other works?

You will remember that we endeavoured also to get Lord Campbell's Act made applicable to mines as it is in the case of railway accidents, but failed.

Perhaps your plan is better "to make it imperative on the mineowners or lessees to support all those who are injured in the mines, by the neglect of those in charge or who are carrying on the works for the owners, or the dependents of those who are killed. The ratepayer in mining districts, and the public generally, might now support such a proposal, and it would not, in fact, press very heavily on the companies or individuals working the mines, and in the case of small mines they might establish accident insurance companies, or in large mines be their own insurers."

Would it not be a good plan, taking advantage of the feeling of the country at the disgraceful state of the working of the Blantyre Mine, as shown by the evidence, to try for an amending Bill to the present Act for next session containing the following provisions?—

1.—That the adoption of safety detaching hooks, with the necessary machinery for cages and kibble, should be imperative in all mines.

2.—That no blasting or naked lights be allowed in any fiery mine.

3.—That firemen should be examined by a Government Inspector, and only those who obtain a certificate be employed, and that their duties be clearly specified.

4.—That a report of the state of the machinery and ventilation of the workings of the mine be made daily by the agent or fireman, and entered in an open register kept for the purpose in the office at the surface, to be open to the Government Inspector, and to the men.

5.—That the provisions as to Government Inspectors be amended.

6.—That all damages for loss of life or injury to person caused by neglect or non-observance of the Act be borne by the owners or lessees of the mines.

At the time when passengers were looked in railway carriages, Sydney Smith wrote a letter to the *Times* protesting against the proceeding, and stated that "until a Bishop or Member of Parliament was burnt public feeling would not be sufficiently aroused to compel the directors to rescind the rule."

So it may require such a fearful accident, and such a gross neglect of proper precautions, as appears to have been the case in the Blantyre Mine, to arouse public feeling to support an act in carrying an amended bill.

Alex. Macdonald, Esq., M.P., Newhall, Hamilton.

Meetings of Public Companies.

DEVON GREAT CONSOLS MINING COMPANY.

The ordinary half-yearly general meeting of shareholders was held at the offices of the company, Greeshaw House, on Wednesday, Mr. PETER WATSON in the chair.

Mr. A. ALLEN (the secretary) read the notice convening the meeting; the report of the directors was as follows:—

The directors of the Devon Great Consols Mining Company (Limited) regret that they are unable to submit to the shareholders at the present meeting so favorable a statement of accounts as they presented last May, when an apparent favorable turn had taken place in the affairs of the company, and they had it in their power soon after the meeting to declare a dividend of 5*s.* per share (25*s.* 6*d.*), which was paid on July 1st. Since then, however, considerable depression has taken place in the standard for copper ores, and the last three sales (two of which only are brought into the present account) instead of realising 10,000*l.*, as the three previous ones did, have produced only 5400*l.*, being fully 3500*l.* less, or equal to a loss to the company of about 7*s.* 6*d.* per share.

By reference to the half-year's account of receipts and expenditure to Oct. 31, 1877, it will be seen that 5403 tons of copper ores realised 17,824*l.*, being an average of 3*l.* 6*s.* per ton, against 5187 tons sold the previous half year for 18,574*l.*, averaging 3*l.* 11*s.* 6*d.* per ton. At the several half-yearly meetings the directors have had to regret the continued fall in prices obtained for copper ores, but such a serious depression as now exists has not occurred for many years. Your directors hope and believe that, with a revival of trade generally, enhanced prices will next year be obtainable.

Your directors have recently given earnest consideration, and devoted much attention, to the heavy costs of working these extensive mines, and they confidently anticipate that the next half-year's accounts will show considerable reductions in the expenditure. The management of the mines has been informed of the absolute necessity of making the greatest possible reductions in the monthly costs, without interfering with the due and efficient development of the mines, and especially to give more energy and consideration in every department, both underground and at surface, in order to lessen the expenditure. In accordance with the terms of the lease (from His Grace the Duke of Bedford), which stipulates that Richards' engine shaft shall be sunk to the 300, it will be observed that this desirable object is accomplished. It has necessitated a very heavy outlay in the past five years, and it is hoped that, on the intersection of the lodes by cross-outs at this depth, further important discoveries of ore will be made.

There is a sum due for arsenic amounting to 264*l.*, which is not credited in the account, but an arrangement has been made with respect to the payment of the same. A contract has been entered into for the delivery of arsenic for the year 1878; and, with a revival of trade, the directors anticipate a considerable advance in the price. The immense importance of rock-boring machinery in the quicker development of mines is now generally admitted, and the directors have this really vital question under their constant consideration, with a view to the ultimate adoption of the most efficient and economical machinery.

The directors grieve to have to communicate to the shareholders the serious illness of their old and faithful servant, Captain James Richards, who has been managing agent from the commencement of a period of over 33 years—but has been incapacitated from attending to his duties for the last five or six months, and whose condition is such that the directors have considered it their duty to appoint his brother, Capt. Isaac Richards, to act for him. It may be well to inform the shareholders that Capt. Isaac Richards has for a great number of years filled the important post of superintendent of the ore dressing and reduction departments, in the knowledge of which he is thoroughly versed; and, with the hearty goodwill and assistance of the officers with whom he has been so long associated, the directors have no doubt but that he will prove himself fully as competent to the new duties devolving upon him.

The CHAIRMAN said, he had very much pleasure in taking the chair, but he had to regret the absence of their worthy friend, Mr. Thomas, who had been Chairman of the company for many years, and whose continued illness had compelled him to go on the Continent for a period, and hence they had not been favoured with his assistance for some months; but the directors hoped that after winter was over Mr. Thomas would return in better health, and be able to attend to his duties as Chairman of the Company. Having formally moved the adoption of the directors' report, the statement of accounts, and the manager's report, the Chairman went on to say he regretted that Mr. Morris, the resident director, was too unwell to be here to day. He also regretted the continued illness of their manager, Capt. Jas. Richards, who had had the management of the mine from the commencement—a period of something like 33 years. During the last six months Capt. Richards had been, and still was, dangerously ill, and in the interests of the company the directors had thought it desirable to appoint Capt. Isaac Richards to act in his place, and Capt. Isaac Richards was present, and would afford every information necessary upon any question. With regard to the statement of accounts for the half-year, the shareholders would find that the copper returns had been 5400 tons, realising 17,800*l.* They would see by the accounts that there had been a considerable loss, which, as they were aware, had arisen through the continued fall in copper. To give them some idea of the serious nature of the matter, he would tell them that the three sales for May, June, and July realised 10,000*l.*, whilst for August, September, and October they realised only 6800*l.*, making a difference of 3200*l.* in the three months. It was a somewhat less produce, but it principally had arisen from the very serious fall which had taken place. They had since sold 986 tons, which had realised only 21,551*l.* per ton. The average standard of the last sale was 87*l.* 14*s.*, and the returning charges was 37*l.* 18*s.* 7*d.*—that is to say, the several mines obtained for this general sale about 50*l.* per ton, whereas the smelters only gave this company 45*l.* per ton, making about 5*l.* per ton less to this company than was given to the other mines which sold at the last Ticketing. This in some measure had to do with the low produce as a matter of course, but at the same time there should not be that serious difference, but it had now continued for some months, and he feared would be continued till the company took some action to protect its own interests. The directors thought that the smelters, notwithstanding the depressed state of the copper trade, should certainly give this company a better price. That brought him to what was stated by Mr. John Pender, M.P., at the recent meeting of the Panulicillo Copper, where they had sold a large quantity of copper with scarcely any profit. The Cape Copper Company had made some arrangements for smelting 6000 tons of their ore, by which they anticipated they would get a better price. The Rio Tinto Company had sold enormous quantities of stuff, but there was unfortunately no profit left for the original shareholders after the payment of the debenture holders. The Quebrada Company were suffering in a similar way, and at the recent meeting of the Scottish Australian Company he noticed that his friend Mr. Adolphus Young, M.P., also called attention to this very serious matter. And this brought him to this point—that bad as the price of copper was at the present time in this country they had the fact that the foreign companies could not produce copper at a profit at the present time. Now there was sold by a company, he noticed, over 100,000*l.* worth of stuff in the last 12 months in Australia, and there was

scarcely any profit whatever, and, therefore, it was impossible for the copper mines to go on at the present state, producing ore at no profit, not only in this country, but in foreign countries. With regard to the future, Mr. Pender volunteered a statement at the Panulicillo Copper Company, in which he said, "I believe when the war is passed, and we get into a normal condition of peace and progress, there is nothing likely to be benefited so much as copper." Now, he fully agreed with that opinion, because although copper was so bad at the present time, at the same time it was not lower than it was in October, 1870, which was the time of the lowest price for Wallaroo copper, 69*l.* per ton, and then everything looked almost as depressed as at present; but immediately after the Franco-German war was over, in December, 1871, there was a rise to 94*l.*, so that in 14 months there was a rise in price of no less than 25*l.* per ton. The shareholders would remember that at that time, which was exactly six years ago this very November, there was an advance of 3*l.* per ton, and just see what effect that advance of 3*l.* per ton had upon the property of this company. At the time of that advance of 3*l.* per ton in November, 1871, the shares of this company, which had stood at 85*l.* to 90*l.* per share, rose 35*l.* to 40*l.* per share in one week, making a rise in value of the property about 40,000*l.* A great many people had anticipated that the present war would cause metals to advance, not only copper but lead and tin; such had not been the case, but to show that the advance was yet to come he would mention one or two facts. What was the chief cause of the rise at the time to which he referred? Well, one of the chief causes of increased demand for copper was for the manufacture of metallic cartridges, and it was then estimated that in Europe alone fully 15,000 tons were wanted annually for that purpose, and but a very moderate proportion found its way back into the market in the form of old metal. From a paragraph he extracted from a Russian paper at the date referred to, it appeared that the Russian Government then had 214,000,000 of cartridges, and even that quantity would only give the army 200 rounds per man; therefore, the facts he had mentioned in some measure confirmed what Mr. Pender had stated—that when this war was over in all probability they would see a good time for copper; therefore, he asked the shareholders to bear with the directors and the agents; everything was at present in a most depressed state, but they must look for some hope and encouragement hereafter. It was bad to have such a serious loss as they had had, but that which the war was over the price of copper would have a considerable rebound. With regard to the present price of copper as compared with former years, the shareholders were aware that the company was started in August, 1844, by six gentlemen. In November, just 33 years ago this very month, the first rich discovery was made in this property, and since then, upon a capital of 1024*l.* only, there had been paid in dividends no less than 1,192,900*l.* Three years after the formation of the company, in 1847, the price of copper ore was 6*l.* 15*s.* per ton; in 1857 it was 6*l.* per ton; in 1867, 5*l.* per ton, and in the last year the company had sold 10,500 tons of copper ore at an average of only 3*l.* 10*s.* per ton. Even at that low price they would have had a better account to give, but unfortunately the last sale this month of 986 tons only realised 21,551*l.* per ton.

A SHAREHOLDER: Has the price of copper ever been so low before?—THE CHAIRMAN said that in October, 1870, the price of copper was 69*l.* per ton, which was the lowest price for over a century, and now it was as nearly as possible the same price within a pound or two. The previous month's sales were at 21*l.* 4*s.* 6*d.*, and now at 21*l.* 5*s.* 5*d.*, but the latter had some precipitate copper in it, which somewhat increased the value. What he wanted to show them was that copper had now arrived at about the lowest price to which it could possibly go; it could not possibly be remunerative at the present price, and, therefore, when things came to the worst they must look to the bright side, and hope that they would soon take a turn for the better. (Hear, hear.) Some time ago he suggested that a letter should be addressed to the smelters on the subject, and he still had the idea that something must be done, and possibly the company would look out to see if it could do better elsewhere. (Hear, hear.)

A SHAREHOLDER: Is there anything in the dressing of the copper which the smelters object to?—THE CHAIRMAN said there was not; on the contrary, it was better dressed than a good deal, but it possessed a lower produce than some other, but at the same time there should not be that difference of 5*l.* per ton in the price.

Capt. ISAAC RICHARDS: The difference is this—that it takes a greater number of tons of ore, and there is more cost for making the copper. You do not get the same amount per unit for a small percentage as for high; still the price obtained was very low.

THE CHAIRMAN said the Cape Copper had decided to get their own copper smelted for a certain sum, by which they expected to obtain a very much larger income. There were other smelters than those who went to the Cornish Ticketing. As regarded the arsenic, they had not delivered so much as previously. In accordance with the agreement with the Duke of Bedford, the Richards' shaft had been sunk to the 300 fm. level. During the five years that shaft had cost the company considerably over 5000*l.* That work was now accomplished. There had during the same period also been spent out of revenue between 16,000*l.* and 17,000*l.*, inclusive of that 5000*l.* Having gone down to that depth it was a question whether they should sink deeper, or whether they should proceed to extend the various levels. He wished he had a better account to give them, but the present position of affairs arose from a circumstance over which the directors could not possibly have any control—from the depressed state of the copper market. They would remember that in the year 1870 the shares of the company at that time sold for 70*l.* per share, but by the rise in the price of copper which he had spoken to them about, in the short period of 13 or 14 months, the shares went up to 140*l.* and 150*l.* per share, and he believed it was a fact that the reserves of copper ore, as far as the tonnage was concerned, was greater now than at that period. So it really was only a question of a rise in the price of metal to place this company in a better position. About a month ago he visited the mine in company with a gentleman who was now present, and that gentleman, although not previously a shareholder, had since bought shares. As regarded the reduction of the cost, the agents had the most positive instructions to reduce the expenses to the lowest possible point during the present period of depression, so as to meet the times. There had been some rumours that the company were about to make a call a month or six weeks ago; he could only say he trusted it would be a long time before the directors asked the shareholders to respond to a call. (Hear, hear.) As long as the directors could work the mine efficiently to make both ends meet, the shareholders might depend upon it that no call would be made. (Hear, hear.)

A good deal depended upon the delivery of arsenic to assist the company. He (the Chairman) hoped at the end of the next six, or at any rate of the next 12 months, the directors would be able to put a very different statement before the shareholders. A Statesman had stated the other day that this country went by "jumps and leaps," and certainly he had come to the conclusion that such was the case. He trusted that the present general depression of trade and commerce would take a good leap in the right direction. (Hear, hear.) He was happy to say that within the last two days an amount of 15*l.* in 1*l.* had been announced on account of this company's claim of 635*l.*, against the Governor and Company of Copper Miners, and ultimately the other 5*s.* in 1*l.* would be paid. Another subject he would call attention to was with regard to Boring machines. These machines had been used with great success at Carr Brea and Dolcoath, and some other mines, and the question for the directors to consider was whether the time had not arrived when they might be introduced into this mine, as they would greatly facilitate the work, and by economising labour reduce the cost. He believed that in a good many of the western mines the lords had consented to contribute something towards the purchase or working of these boring machines. The directors had consulted with the Duke of Bedford's agent on the subject, and he believed the Duke had been communicated with, but so far the Duke had not consented to contribute anything, but he still hoped that the Duke would see his way to give the company a helping hand in the purchase of these machines. (Hear, hear.) Of course the cost would depend upon the number of drills; they might go to an expense of

500L, 1000L, 2000L, or upwards. There was no doubt these drills would be a great assistance at Richard's shaft, where instead of sinking about 8 ft. per month, they would be able to drive three or four times that rate. He might mention that since his return from the mine—about a month ago—he had spent on an average two, three, and four hours a day in the office, and it had been a serious strain upon his attention, and had he known that it would have taken up so much of his time, probably he should not have occupied his present position; but it was a pleasure to him when he saw a difficulty to try and get out of it, and he hoped the time was not far distant when all their present difficulties would be surmounted. (Hear, hear, and applause.)

The CHAIRMAN, in answer to a question, said the increased cost of one six months over another might be easily explained. They might have 100L extra of timber, or 200L, or 300L extra of iron, and other items of a similar kind, and the tutwork, as in the last six months, was higher.

Capt. ISAAC RICHARDS said the expenses at Richards' shaft were put an end to, except the driving. They had to drive 50 fathoms west of the shaft.

The CHAIRMAN said that under the agreement with the Duke of Bedford there was a good deal of work to be done beyond sinking the shaft to the 300 fm. level. They had to drive east and west on the lode. They had now begun to prick into the lode at the bottom level, and at any time might come upon a good discovery.

Capt. I. RICHARDS, in answer to a question, said the ground at the bottom of the shaft was improving, but he could not speak of its value until the lode was cut through, which would be shortly. They wanted to prove the lode in driving.

The CHAIRMAN, in answer to a question, said they hoped to decrease more than 12 per cent. in the cost. He mentioned that the merchants' bills and all liabilities were paid month by month. He expressed a hope that the shareholders themselves would visit the mine, so as to see what a large and valuable property they had. He explained that the exploratory works were necessary in order to lay open the mine, and in the hope of making discoveries of ore.

Capt. ISAAC RICHARDS, in answer to a question, said he could not help thinking that they would make some good discoveries in the bottom levels. Things were looking well, and they had good bunches of ore.

Mr. DETTMAN said he had visited the mine in company with Mr. Watson, and was so satisfied with what he saw that he had since become a shareholder. (Hear, hear.)

After some further discussion of an unimportant character the report and accounts were adopted.

A cordial vote of thanks to the Chairman (Mr. Peter Watson) for his very lucid remarks, and also to the directors, closed the proceedings.

PENSTRUTHAL CONSOLS TIN AND COPPER MINING COMPANY.

The ordinary general meeting of shareholders was held at the Guildhall Tavern, Gresham-street, on Wednesday.

Capt. JOHN WALKER in the chair.

The CHAIRMAN said the shareholders did him the honour to elect him as a director at the general meeting on July 17, and from that time to the present he had never ceased to exert himself body and mind in the interests of the company. Mr. Murray, himself, and the secretary went down the mine as soon as they possibly could, where they remained during a whole week, and in that time several discoveries were made. The result was communicated to the shareholders in a report early in September last.

Mr. E. ASHMEAD (the secretary) read the notice convening the meeting, and the minutes of the previous meeting, which were confirmed.

The CHAIRMAN said he would call upon Mr. Murray to read Capt. Polkinghorne's report, which he would probably be able to enlarge upon. He had the most perfect confidence in Mr. Murray's knowledge of the mine.

Mr. C. H. PORTS asked what had become of the amount of the Victoria Six per Cent. bonds not stated in the accounts submitted as compared with the previous statement?

The SECRETARY explained that the bonds had been sold, and the proceeds had been devoted to the purposes of the company.

Mr. ADAM MURRAY then read the following report by Captain Polkinghorne, dated Saturday last, enlarging and commenting upon several of the clauses contained therein.

Nos. 24.—The Highburrow shaft is sinking under the 72, by six men and three boys. Since the directors' visit in August last this shaft has been sunk 8 fathoms, for 5 fathoms of which the lode has been 6 ft. wide, composed of tin and copper ore, mangle, peach, and a door-spar—a well-defined, masterly lode for the last 6 ft. We have been passing through an alluvial course, which has disordered the lode for the present; the footwall is continuing its regular course after passing through this patch of alluvium, and the lode gets in more settled ground. I have every reason to believe we shall have a productive lode, seeing we had several good shoots of ore in the 58, east and west of the shaft. The 72, driving east of Highburrow shaft, by two men, in the last three months has been driven 7 fathoms, through a lode from 4 to 5 ft. wide; in the last 8 ft. it has changed its character, and is now composed chiefly of mangle, disintegrated with tin, worth about 3L per fathom. I have known appearances similar to this lead to copper ore. The 72, driving west of Highburrow shaft, by two men, has been driven during the last three months 4 fms. 3 ft., through a lode 4 ft. wide—a very promising looking lode, and from the shoot of ore seen in the 58 above, dipping east, we expect to meet with this shoot in a few fathoms further driving; worth at present for tin 3L per fathom. In the 58, west of Highburrow shaft, we have driven a cross-cut south from Highburrow lode 20 fathoms, and intersected a lode 2 ft. wide; we have commenced to open east and west on its course, and it is yielding good quality copper ore and tin, worth 6L per fathom. In all probability as we leave the influence of the cross-cut the lode will improve. In the 45, driving east and west of the cross-cut, by four men and two boys, we have extended this level east and west 4 fathoms; the lode is producing rich stones of copper ore and tin, worth 6L per fathom. The air in this level has become very impure, and we deem it advisable to sink a winze through to the 58 below, which will give good ventilation, and lay open some ground for tribute, also enable us to continue the driving on the lode in the 44 and 58 fm. levels, and to resume the driving of the cross-cut south, which is entirely in unworked ground, and more copper lodes are known to be in that direction. We have 22 tributaries working on tin and 14 on copper ore, our great object being to keep as many men on tribute as possible. —W. POLKINGHORNE.

Mr. MURRAY then drew attention to the fact that if there had not been a monthly expenditure of 120L in tutwork or exploration of the property the mine would have more than paid its way, for the profit on the actual working had been 60L, 70L, and 80L per month. The exploratory work was without doubt the cause of the deficiency. It was certainly not at all a bad account, when the low price of tin was taken into consideration.

The CHAIRMAN, in reply to a question, said that when he became connected with the management of the company he found Captain Teague was receiving 30L per month for his services, an expenditure which he thought the company could not afford under the present circumstances. Everything possible had been done to cut down the expenses as much as possible. Capt. Teague had promised to do what he could to promote the interests of the company without remuneration.

Mr. LABY explained, with reference to the Victoria bonds, that when the company began to want capital the directors applied to their bankers for a loan, which was obtained upon security of the Victoria bonds at 3 per cent. The bonds were afterwards sold to repay the loan and for working expenses, and the difference was represented by the item of cash at bankers.

A SHAREHOLDER asked what the items Cathedral and West Jewell Mining Companies and Pascoe, Grenfell, and Co. were for?

The SECRETARY replied that 200L was due to the company by the Cathedral in respect to an over payment for an engine, 7L 10s. was the share which the West Jewell Company should bear in a dinner which was provided for the shareholders in the three companies, and the last mentioned item was for copper ore, but that had since been paid. With respect to the matter of the engine, a cheque was drawn for 400L and paid for the engine, but in the books it was charged as 200L only, but this company had never received the difference from the Cathedral Company.

Mr. TAYLOR then explained the circumstances under which the engine referred to was purchased of the Cathedral Company, stating that 200L was for the drawing apparatus. When the engine was received at Penstruthal it required repairing, and Mr. Greene found that he had been greatly misinformed as to the value of the engine, and if he had been able he would have paid the company the 200L, so that it should not have been the loser by the transaction.

The CHAIRMAN, in reply to a question, said the late Mr. Greene

was the managing director and secretary to the company. He (the Chairman) had examined the engine lately, and found it to be rotten and bad, and that it had been daubed over before it was sent to the Penstruthal Mine. The engine was purchased during August or September, 1876. A claim for the return of part of the money paid for this engine had been lodged in the Stannaries Court against the Cathedral Company.

A SHAREHOLDER called attention to the large amount of arrears of call, and the interest due upon those calls, and asked whether the company was likely to recover any part of these amounts?—The CHAIRMAN said steps were being taken to recover the amounts, and that probably part of the shares would have to be forfeited.

Mr. J. J. WINNER (the solicitor) said he was doing all he could to get the arrears in. Some had already been recovered, and others the secretary was endeavouring to get in. Though some of the amounts were not likely to be obtained the list was worth something. With respect to the 4400 shares wrongly issued by the late secretary, which was the principal matter they had to consider, unfortunately the facts were that he had issued overdrawn shares, or dummy scrip, or duplicate shares, to the number of 4400. It was only fair to say that Mr. Taylor, who was Mr. Greene's principal clerk, was in no way mixed up in these fraudulent transactions. In some cases shares were issued three times over, and hence the matter was an extremely difficult one to deal with. Of these shares 3935 had been registered in the books of the company, and there were 855 unregistered, but only certified, and between these two descriptions of shares an important difference had been drawn by Mr. Judge Joyce, an eminent counsel, who had been consulted upon the matter. After giving the particulars of the issue of these shares Mr. Winner quoted Mr. Judge Joyce's opinion, which was to the effect that a special meeting would have to be held to deal with the matter. The holders of the 3935 registered shares were not in point of law shareholders in the company, but the company would be liable to them for the value of the shares, as they were registered in the books of the company, and the company might create and issue to them new shares out of the 4202 unissued shares still in possession of the company. To those who hold the unregistered shares it was suggested that one good share should be given for every two shares now held by them. It was a difficult question to settle, as the precise circumstances had, probably, never occurred before.

It was stated by Mr. WINNER, in reply to a question, that there were 262 shares standing in the name of the late Mr. Greene, whose affairs were now occupying the attention of the Chancery Court. The company would claim against the estate, but it might be a long time before anything came of that claim.

After considerable discussion, the following resolutions were passed:—
1. That the officers of the company be and are hereby instructed at this meeting to take the necessary steps to give to the registered transferees of duplicate shares, and to the certified but unregistered transferees of such shares, amounting altogether to about 4400 shares, valid paid-up shares in the company, by appropriating for that purpose the 4202 unissued shares, and by the creation of shares corresponding to the balance of the said 4400 shares by issue of new ordinary shares as fully paid-up.—2. That in the circular about to be issued to the shareholders with reference to the above share matter, notice be added that a resolution will be proposed at the meeting to raise additional capital by mortgage debenture bonds, bearing 5 per cent. interest per annum.—3. With reference to resolution No. 2, some of the shareholders have already promised to advance money to the company.—4. That Capt. Walker's appointment as a director of the company be confirmed, and that Mr. James Walton be added to the board.—5. That Mr. Edward Ashmead be the secretary of the company, subject to his not holding or dealing in the shares of the company.—6. That the thanks of the meeting be given to the Chairman.

Mr. LUTY, who said he was purser and manager of the mine for four years before the present company worked, expressed his belief that there was not a young mine in Cornwall so well worthy of prosecution as Penstruthal, and he believed that it would yield very good results if properly worked.

After some further conversation the meeting closed with a vote of thanks to the Chairman and directors.

VANCOUVER COAL MINING AND LAND COMPANY.

The semi-annual general meeting of shareholders was held at the offices of the company, Cannon-street, on Tuesday.

Mr. J. GALSWORDY in the chair.

Mr. SAMUEL M. ROBINS (the secretary) read the notice calling the meeting, and the report of the directors was taken as read.

The CHAIRMAN said he regretted that owing to the absence of Mr. Fitzwilliam from the same cause which had prevented his attendance at the previous meeting—illness—he had been requested to take the chair at that meeting. Mr. Fitzwilliam was still extremely unwell, and had been ordered to pass the winter in the South of France. The directors regretted this very much, and he was sure the shareholders would do the same. (Hear, hear.) The report presented by the directors had doubtless been read by the shareholders, who would have seen that although not one to form a subject of much congratulation, still it was a better report than that of the previous half-year, and enabled the directors to pay a dividend at the rate of 5 per cent. per annum, and to carry forward a considerable sum to the next account. They would also have seen that the sales of coal had been very considerable, the output having been rather larger than they had hitherto, so that the company was just in the position of most large concerns of a like character, doing an enormous business at a small profit. That state of things was, he believed, too universal to require much excuse or extenuation from anyone occupying a position similar to that which he was filling.

The shareholders would also have seen from the report that the mining operations had been conducted with satisfactory results, that was to say the opening out of the new mine was progressing favourably. In the Fitzwilliam Mine they had got down to a point at which it was believed that coal could again be produced, and that this mine would turn out the success which it was anticipated it would prove. The Diamond boring had been carried on very successfully. The points he would like to say a few words upon were, he thought, very few, but he would be very happy to answer any questions which shareholders might feel disposed to put after he had finished his remarks. With regard to the cost of production which it had been intimated to the directors that they should endeavour to cut down, as he had said upon a previous occasion, that had been the great endeavour of the directors, and they had done so to a certain extent in the new mine by a new system of working. But it would not do to encounter any great trouble with the miners if it could possibly be avoided; he was not, however, prepared to say that further reductions should not be pressed for, but he thought the shareholders would do well to leave that matter in the hands of the directors and the managers at the mines, so that they might embrace the first opportunity of doing something further in that direction. The costs had been cut down considerably in comparison with the cost of working the old mine. The policy of the board was rather to work the new mine, which would be done at a less cost than working the Old Douglas or Fitzwilliam Mine, so as to compete more favourably with their neighbours in the San Francisco market. With regard to the area of coal proved in the different mines, they might safely say that at the Old Douglas Mine 150,000 tons had been proved, and at the New Douglas half a million tons. He said this in the absence of any technical report from the manager, whose reports should be sent more frequently. With regard to Fitzwilliam, there were no data to calculate upon, but at this mine they had got below the "fault," and they had now come upon the coal, which upon a former occasion had led him into a somewhat glowing statement. With respect to the Diamond boring, the directors had had serious thoughts as to whether this operation should be continued, as it might be considered rather a luxury in these times, but when they saw what the Diamond boring had done for them, he thought the shareholders would agree with the directors that it should not be discontinued. (Hear, hear.) It was costing the company 700L or 800L a year, but it had done so much good for them that he would recommend its continuance at present. (Hear, hear.) The shareholders would also, he thought, endorse the policy which the board had adopted of using the boring apparatus for the purpose of testing the fields discovered, and not in going wild after for more coal. They had already by its use found that there is a great deal of coal underlying the company's land at various distant points, but what they now wanted was to test it more immediately in connection with the new mine. More explorations should be made to prove the value of the field in the neighbourhood of the new works, so that, as they had laid out a large sum of money there, they might see that it was laid out to advantage. This was the course which the directors had determined to pursue with regard to the Diamond boring machine. He might mention that the Diamond boring began on Oct. 11, 1875, and the fourth bore was completed on Sept. 29, 1877, the aggregate depth being 2300 ft., at a cost of \$13, or about 18s. per foot. In boring by the old method the cost would have amounted to 3L per foot, and would have occupied twelve times longer, the difference being almost inches against feet. It was quite clear that to discard the machine at present would not be judicious or politic, and the directors had determined on continuing it. No. 1 bore was commenced Oct. 11, 1875, and at a depth of 505 ft. coal was discovered 9 ft. thick. It was some distance north of the new mine. Then No. 2 boring was

commenced, and at a depth of 377 ft. they discovered 4½ ft. of good coal. This was south of the new mine and nearest to it, and was, therefore, in a very good position. No. 3 bore was commenced about ½ mile from No. 2, in a southerly direction, and at a depth of 295 ft. 14½ ft. of coal was reached; and No. 4 bore, about the same distance, and a little more to the east, discovered 3½ ft. of coal; so that the machine had demonstrated that the property contained a very large quantity of coal. With regard to the balance-sheet, he thought the shareholders would admit that it was a very clear statement of the position of the company. Perhaps there were one or two items they did not care about seeing there, and he had suggested that they should eliminate them by a process which he thought would meet with their approbation. The buildings (workshops, stores, and dwellings) were valued at 1510L 16s. 8d. They had written off, perhaps, a little more than was necessary here, but there were other items at not so low a figure, and they might now, he thought, lay their hand with regard to the depreciation of the first item to some extent, if not entirely, and let the depreciation go to take away items as Park Head adit level, Lower seam exploration, and Newcastle exploration. These he would like to see out of the account; as they did not produce anything they were not, properly speaking, assets, and the sooner they were out of the accounts the better. He thought the process he had suggested would in a short time eliminate them, and that would be better than having a revaluation of the properties. With these explanations there was not, he thought, an item which could be cavilled at, indeed there were some which could reasonably be increased. There was one point he had been asked to explain, that was the quantity of coals sold at their own wharf, and the prices they fetch as compared with those sold at San Francisco, after deducting freight and agency. With regard to the quantity, the total sales at San Francisco for the half-year were 29,557 tons, and at their wharf 2631 tons. He thought it would be very undesirable to state in public the prices received at either place. (Hear, hear.) He would then conclude by moving the adoption of the report and accounts.—Mr. JOSEPH FAY seconded the motion.

Mr. TENDRON said it seemed probable that the low price of coals would continue for some little time longer in San Francisco, but so far as could be seen under the circumstances the prices were not likely to go lower than those now ruling. Nothing had given him more satisfaction than what the Chairman had said about the Diamond boring machine, and of the intention of the board to continue the policy they had hitherto adopted with regard to it. There was one paragraph in the report which stated that "the boring had been continued to a depth of 676 feet, but only thin veins of coal had been met with." This was a little disappointing, but he did not think that an argument more in favour of the continuance of the boring machine could be found than that the properties were subject to these fluctuations sometimes. If they had had the advantage of the boring machine when the Fitzwilliam Mine was first worked they would not have had the disappointments they had. He was very glad that the policy of continuing the exploration of the property had been decided upon. If there was anything which would give shareholders confidence during bad times it was a knowledge that their property was a valuable one, and that there was no fear of its being worked out. (Hear, hear.)

Capt. PRYMAN asked whether there would be any objection to replacing the 38L borrowed from the reserve fund to pay the last dividend. He thought they would do well to raise that fund to 4000L, as it already amounted to 3790L, and they were carrying forward 1283L.—The CHAIRMAN replied that he was an advocate for improving the reserve fund, but it would, perhaps, be better to keep that question until the end of the current half-year.

The report and accounts were then unanimously adopted. Mr. C. S. HILL moved the declaration of a dividend for the half-year at the rate of 5 per cent. per annum, free of income tax.—Mr. ROBINSON seconded the motion, which was carried.

The proceedings terminated with a vote of thanks to the Chairman and directors, coupled with an expression of sympathy for the absent Chairman.

GOLD RUN HYDRAULIC MINING COMPANY.

The ordinary meeting of shareholders was held at the offices of the company, on Thursday.—Mr. HILL in the chair.

The SECRETARY read the notice convening the meeting.

The CHAIRMAN said—Before asking the shareholders to pass the accounts I should like to say a few words upon the position of the company, and also to make some few observations on the accounts themselves. At the last meeting you were informed by Mr. Stone in his report that he was engaged in doing some dead work necessary for preparing the washing at the mine, and he was engaged in making some new inclines, in consequence of the old incline becoming at times stopped up. Since the last meeting that has been completed, and during the past year washing has progressed regularly. The water season, as many of you are aware, was an unusually short one. It commenced very late, and ended very early. Instead of commencing washing about the end of December, it did not commence till the last day of January. During the time we had water we were enabled to make four runs. These runs, although not shown by the report, produced a clear profit on the working, amounting, as near as possible, to \$4300. Of course, as the shareholders were aware, in commencing to open the mine great difficulties were experienced, so that the fabulous statements in the time of Reed could not be considered as the regular runs, if I may use the term. The runs were of various numbers of days, some longer and some shorter. The first run was of 31 days, and the net profit derived \$965. The second run was 33½ days, and the profit was \$1096. The third run was 27 days, and produced a net profit of \$1256; and the last run, which is the shortest, and ended on June 21, was for 19 days, and produced a clear profit of \$963. Had the runs been more frequent and of longer duration, naturally we should have made a greater profit than we have. However, as Mr. Stone said it would take two years to open out the mine, I think we ought to be fairly satisfied with the result of the year before he promised us dividends. During the past autumn I am happy to say we have not had very much dead work to do. The mine had been opened out to a certain extent during the course of the summer by washing, and work that has been done during the autumn has been only such as was necessary to put the mine in a condition to wash for the year 1878. From Mr. Stone's report you will see the nature of the work he has been engaged upon—raising the incline to the surface of the present level, having a new string of pipes laid down (which I believe is now completed), and he has been altering his boxes in the tunnel and his sluices. I may say that one disadvantage he has been under has been our contract with the Miners' Ditch Company; unfortunately they have not been washing so regularly as usual, and as our debris runs into the same set of boxes at the junction with our own, it requires double the amount of water to wash away the stuff after it leaves our sluices. The sluices in the tunnel get occasionally choked, and that necessitates the stopping of the washing for some little time for the purpose of clearing. It was an advantage at the outset to have our tunnel running into the tunnel of the Miners' Ditch Company, as it saved us a considerable expense; we had not so much to drive on our own account. If at some future time we become prosperous, we might become independent of the Miners' Ditch Company by having a tunnel of our own. The only rent we pay for the use of their tunnel is any tallings that may run over their blocks after having our own boxes. But still these stoppages have hindered Mr. Stone to a certain extent; he has been occasionally obliged to stop, and he shows by his letters that there has been a serious impediment in the regular washing. Of course we are unable to speak of the prospects of the present year; all that we know is that the mine is in a proper condition to commence washing, and should the water season prove a good one, there is no reason for doubting that our profits will be as good as we anticipated at the outset.

The drifts were run last year, but he forebore exploding the blast, forsooth that the water season was not likely to be a good one. If he had exploded the drifts last year the powder would have been thrown away, as he could not have washed away the ground loosened by the blast, and he put off the blasting until the time that Mr. Stone wrote. He also writes: "One of my workmen engaged in making my pipe has been ill, in consequence of which a portion of my 11 in. pipe is not completed, but will soon be and will be ready in 10 days—that would be Nov. 10—and I anticipate a very prosperous season for the Gold Run Company, as we are favoured with an average water supply." He then refers to the expenses of labour, which will scarcely interest the shareholders. This letter was received on the 20th of this month. The Chairman read an extract from the Mining and Scientific Press of San Francisco, referring to the preparations made for the coming season's washing, and in which the position and prospects of the mine were favourably discussed. Continuing his remarks, the Chairman said: It is a satisfactory to hear such an account from an independent source with respect to our prospects. With regard to the accounts, I must call the attention of the

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shareholders to a mistake that has been discovered since the accounts were printed. However, I am happy to say that it is a mistake on the right side. Our liabilities ought to be reduced by 1897, 3s. 5d. This was an error in the printing, and not in the accounts. I believe, a clerical error, that escaped attention at the time; however, as the error is on the right side, I would suggest that when the report of the directors is sent out a fresh balance-sheet should be sent out with the alteration made in it. The error arose from the fact of the liabilities of last year not having been referred to the working expenses of this year. I stated that the profit on the working was \$4300. This sum the shareholders might object is not shown in the balance-sheet; but the reason of that arises from the way in which the balance-sheet has been made out. I do not think the balance-sheet ought to be mixed up with this way. I think for the future we ought to have a separate profit and loss account, instead of the accounts are made up they will be made up in the form I propose. It is the wish of the directors that that should be so. I have, I think, proposed observations to make, and I will now move that the report of the directors be adopted, and that the accounts be adopted as amended.—Mr. J. L. LORR moved the motion.

Mr. JAMES HILL said that at the former meeting there had been some talk about a mill. He wished to know if anything had been done in respect to that matter? The CHAIRMAN said nothing had been done with regard to the mill. That would require the expenditure of a little money.

The motion was then carried unanimously.

Mr. A. CHADBOURN said he believed, from the position the company now occupied, that for this year they would make a very large amount of money in comparison with what they made last year, principally by the reduction of the cost of the property. He had arranged with the superintendents of other large properties there to reduce the price of labour from \$3 to about \$2.15 per day, and that reduction of the price of twelve men would represent a difference of nearly \$10 per day. The cost of the property would be in the cost of water. The company had been paying for water in such, and they had run 500 inches during the past year. They now intend to run 1000 inches—as they had a new rig of double the capacity of that of last year—and they would get the water at a reduction of 2 cents an inch, which would save the company a saving of \$200. There was a further reduction in the salary of their superintendents. Mr. Stone having taken the management of the Cedar Creek Mine, the salary was to be divided between the superintendents, and this company, instead of paying \$2000 a year, would only pay \$1200, the reduction being a gain of \$800 a year to this company. The amounts represented a saving of about \$1000 on each run, and then the difference between 500 and 1000 inches of water would be a great benefit to the company, and it was believed by miners that it would wash nearly three times the amount of gravel with double the amount of water. Consequently, taking into consideration, with the fact of the reduction in the expenses, it seemed to the company that they were able to get a sufficient supply of water. The only other point which they thought it was desirable to call their attention now was this—whereas, where they were now going to work, was two or three times richer than any part of the gravel which the company had hitherto washed. There was a 6 ft. of this gravel which had never been touched. He had been to the mine last summer, and he found the property in splendid condition; indeed, he had seen a property in a better shape to three water on, and it seemed that they could clear away an acre of ground (or debris) this season. The question which he had raised, and he would explain that it had been intended to purchase a mill for crushing purposes when they could get out a larger quantity of gravel from the blue gravel next to the bed rock, which was so cemented together that it was running it through the sluices, without crushing it, it loses to a certain extent. They were not yet down to the bed rock, but as soon as sufficient space was cleared in the bed rock could not be successfully extracted without it.

Mr. HILL asked whether the mill would be able to work without water?

Mr. CHADBOURN said the mill could be worked by hydraulic power, but the mill required to work the mill would be so small that he had no doubt any difficulty would be experienced on that score. The mill of a neighbouring company could be used all the year round.

Mr. HILL asked if the anticipated extra supply of water would make this company independent of the other company? Mr. CHADBOURN thought it would, taking the various reductions into account, and the prospects of the mine itself, which he thought very good runs would be made from this time.

The CHAIRMAN then moved the confirmation of the appointment by the board of Mr. C. B. Briggs (a large share and debenture holder) as a director.—Mr. BRIGGS seconded the motion, which was carried.

On the motion of the CHAIRMAN, seconded by Mr. ST. ALPHONSE, Mr. CHADBOURN, the retiring director, was re-elected; and on the motion of Mr. ST. ALPHONSE, seconded by Mr. JAMES HILL, Mr. Edward Ashmead was appointed auditor, at a remuneration of five guineas.

The proceedings then terminated, with a vote of thanks to the Chairman and directors for their management of the affairs of the company, the more especially as they were receiving no remuneration for their services.

ENGLISH AUSTRALIAN GOLD MINING COMPANY.

An ordinary meeting of the shareholders was held at the offices of the company, Austinfriars, yesterday.

Mr. E. W. WINGROVE in the chair.

Mr. SMITH (the secretary) read the notice convening the meeting.

The CHAIRMAN said: Well, gentlemen, this is the meeting which, by act of Parliament, every company is now bound to hold within three months of the date of its incorporation; and this company has duly registered on Aug. 8 last, applications having been received for nearly 60,000 shares, although we had only 5000 to allot. The total number—5000—were allotted on Aug. 9. At the time we made the allotment some doubt arose in the minds of some of the shareholders whether it would not have been better to have increased the number of shares, but it was held that we should have to go through a great deal of formality to bring that about, and it was hoped that the 5000 shares would be sufficient for our purposes. Therefore we deemed it necessary to allot 5000 only in the first instance.

On the same day (Aug. 9) we remitted by telegram to our agent in London, £500, and we have since sent him 1500 more, making a total of 16500. The shares were received in Australia—thanks to the rapid mode of communication which now exists between all parts of the world—and were available for purposes on the 12th of that month, and on that day the manager commenced letting out contracts for the work proposed to be done. And since then we have carried on operations, having ample funds to go on with, and, I hope, funds to finish with. It will be necessary to register at the Joint Stock Companies Office the contract for the bonus shares, and that will take some little time, but as soon as we can get that done we shall have much pleasure in sending the shares to the shareholders who have put up on the new shares, and also as far as possible those shares to which they are entitled by virtue of their holdings of old company, which will also be very shortly made up. We have yet to settle the title to the lease for Australia, but that we shall not get for about three months. It is merely the title, which is now in the hands of our solicitor in Australia, and it must be endorsed here. We propose to write for it by the next mail. That, I think, all the business I have to report. With respect to our accounts, under date of Sept. 3—about three weeks after Mr. Clark received the first balance of money we sent to him—his said—"As soon as the work is properly settled at the prospecting shaft and timbered, we propose to let a contract for sinking the shaft a further depth of 150 ft., and as the present end is still being sunk, on Captain Raisbeck's hopes, by a very short cross-cut, to meet the bottom of the prospecting shaft. If the end should be driven far enough before the prospecting shaft is sunk, Captain Raisbeck proposes to commence sinking the shaft deeper as soon as sufficient money arrives to justify us in starting. It would not be advisable to start this work until he has driven far enough south to meet the bottom of the prospecting shaft. I trust that this work is completely well advanced to give a good account of the mine, as Captain Raisbeck says the mine is better than ever in its prospects." The last letter we received, the 10th of this month, was dated Oct. 3, and that has been forwarded to the shareholders.

A SHAREHOLDER asked what number of months the manager expected to be employed in the work upon which he was now engaged.

The CHAIRMAN said if he was going to spend \$200 a month ten months would be at the end of his resources, but it was hoped and believed that the work would be finished long before that time with respect to the value of the mine, Captain Lewis of Clunes, had offered to take the mine and spend \$4000 upon it, giving the company a small royalty on the ore raised. He (the Chairman) mentioned this offer as a proof that, at any rate, Captain Lewis had a practical opinion in the matter, and that had encouraged the directors very much in the matter themselves had formed of the property. The debts of the old company, amounting to 15000, had now all been settled and paid off; and this company began with an available capital of 30000, of which 16000 had been transferred to the mine, leaving 14000 in hand, which was believed to be ample to carry on the business of the company. He trusted those shareholders who had paid upon their shares would now do so.

The proceedings then terminated.

ABSTRACT.—At an extraordinary general meeting of shareholders, on Monday, Oct. 8, Hill in the chair, it was resolved to sanction the action of the directors, C. S. Hill and G. F. Smith to the same extent as those of Mr. W. S. Crowe, who they replace, would have been sanctioned. The directors were requested to pay the shareholders 300 shares at 15s. per share, payable by three instalments of three months, or, failing the issue of these, to offer, under the provisions of May and June, 1874, mortgage debenture bonds to meet present financial requirements. A general meeting will be held in three weeks.

PROVIDENCIA MINES.—At the meeting, on Wednesday (Mr. R. H. Bamfield in the chair), the accounts showed a debit balance of 11874. 4s. 7d. It was agreed that legal proceedings be at once taken to recover arrears of calls. Capt. Lewis and Robert reported that all underground operations had ceased, but two tribute pitches are being worked at 15s. 4d. in the lb. The plant will shortly be put in action.

For remainder of Meetings see to-day's Supplement.]

there is also a good lode standing. The appearance of the mine exceed thus far all expectations; and, if its further development prove a really satisfactory, it will undoubtedly prove a great success, and be the means of directing public attention to the hitherto neglected mineral districts of North Devon. The mine was worked many years ago by a party of Cornish adventurers, who raised considerable quantities of lead from it. The ore, however, was found close upon the boundary of the set; and, as the proprietor of the adjoining ground refused to grant it, there was no alternative but to stop the mine with a fine discovery of lead in sight. The present proprietors have a grant of the adjoining ground, with a run of about three-quarters of a mile on the course of the lode.

CLOGAU (WELSH) GOLD MINING COMPANY.

The following special report has been made for the directors:—

Bontdu, Nov. 21.—On my arrival at the mine last June, with the consent of the board, the deeper workings of the mine were stopped because the increase of water at the bottom of the engine-shaft would necessitate an increase of cost for the driving east of the deep level, which it would be better to avoid until the stopes in No. 7 mine had proved whether the chimney of rich ore was holding down in depth.

In No. 7 so far the ground has shown the most favourable appearance for gold, and there is no doubt we are on the shoot of visible gold which forms at the junction of the main and branch lodes at the top of No. 1.

From the branch lode we have continued to obtain visible gold since it was first opened upon in June. On this lode from No. 1 a level has been since at some past time, but was not driven sufficiently far to prove anything. If this were now pursued a good piece of stopping ground would be opened out, and the sides of the lode might be kept secure by leaving the more worthless portion of the vein to form an arch.

In No. 4 a stop which was to hole through to No. 7 was stopped for the same reason that the deep level was not continued, and also because by not cutting through to No. 7 the saving of the cost of unwatering the mine could be effected. Since then, finding that the water was rising but slowly after attaining a certain height, a party were put in for a few days to try some ground between the old incline and a stop, in both of which places gold had been cut, but, though in very promising quartz, nothing has been found.

One of the abandoned stopes on the back of the adit level above No. 4 shaft is also lately tried, and produced some stones showing a little visible gold. This place has continued to improve, and is now producing some very fine rock. The lode is here 3 ft. wide, with at least 5 fms. in length and the same in height of available stopping ground.

In an old stop on the back of No. 5 level we have cut some good visible gold, which we followed until we reached to level above. In No. 5 level we have driven 60 ft. beyond where the level above was intersected by a fault, and are still in a strong lode with well-defined walls. It is very essential to follow the vein here to prove whether the fault above be only a surface fault or not. We should also then be at the point where a greenstone band outcrops at surface, and would prove whether this band displaces the lode going west.

On the surface west of the engine-shaft a series of costeanes have been put in on the line of the lode, and its existence proved west for a distance in length as great as the already open stopes from the shaft to the east end of St. David's. This part of the lode has so far not been worked upon at all, probably because it carries a covering of detritus of about a fathom in depth, and hence could not be so conveniently examined as the portion further east; but there is no reason why it should not prove as remunerative as the eastern part of the lode, from which, according to the returns from the Crown Office at Dolgelly, above 60,000 lb. worth of gold has been taken. These returns, unfortunately, do not separate the yields from the parts of the lode east and west of the St. David's fault—some 60 ft. beyond where the level above was intersected by a fault, and are still in a strong lode with well-defined walls. It is very essential to follow the vein here to prove whether the fault above be only a surface fault or not. We should also then be at the point where a greenstone band outcrops at surface, and would prove whether this band displaces the lode going west.

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trains, because until we definitely know to what extent and at what rate future supplies will be forthcoming there can be no security.

No one can begrudge the profit to the Australian Importers on arrival parcels, considering the heavy losses incurred during the last two or three years, but for the present we do not see the prospect of establishing any permanent rise. Each year in Tasmania the production increases, and the Government have been petitioned to construct proper roads up to the mining ground, which we understand they are about to do. This will not only facilitate the transport of the tin to the port of shipment, but materially lessen the cost, and if they could previously afford to sell it at 58s. we see no reason, with the improved facilities of transit and the reduced rate of carriage, but what they will be able to continue to supply it at that price, or perhaps cheaper. Settling aside, however, the interest of the miners, we are bound to take notice of the fact, and the estimated value upon it by the Australians. This comparatively new source of supply must be fathomed, that dealers here may be able to form some opinion of its probable range in value; In the meantime, speculators and dealers should not allow themselves to be carried away by any delusive hopes, and move along very quietly and cautiously. The present stock in London is 8737 tons against 9266 tons on Oct. 31, the deliveries for the month being 1016 tons, which is so far satisfactory.

The Mining Market: Prices of Metals, Ores, &c.

It cannot be expected that the sympathies of the public will be enlisted on behalf of the men while they show no disposition to help themselves. We note that at Darlington a meeting has been held for the purpose of conceding measures

North Laxey, 8 to 10s.; Herodcroft, 1 to 8; rateably rising.
Aberdaunant, 4 to 4½; Glyn, 3 to 4; Ladywell, 1½ to 1½; Pandora, 3 to 1; Gorseid and Merilyn, 5 to 5½. Rookehope shares advanced to 25s., but leave off weaker, at 23s. to 25s. Van Consols, 3 to 4. South Cwmystwith, 3½ to 4; the accounts here show cash at bankers, 6297, 5s. 6d.; calls in arrear, 11937, 15s.; uncalled capital, 15000. Red Rock, 2 to 2½; the accounts show cash at bank, 4207, 9s. 1d.; unpaid calls, 3297, 15s.; further calls to be made, 1797, 10s.; and shares in reserve, 20000. The mine has sampled 40 tons of lead ore, and the agent hopes to make regular and satisfactory returns. West Wye Valley, 3½ to 4; the accounts issued show assets 1905/ 15s. 8d. to the end of October; since then a dividend has been declared, no ore have been sold, but the agent hopes to sell 60 tons of lead by the

value of tin was not unfounded; and, further, we believe that if this quotation had been known sooner the recent rise to 71 $\frac{1}{2}$ would never have taken place. We have based the future of the market chiefly upon the advices received from Aus-

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COPPER.—The course of the market has been downward, and Chili has been sold at 63 $\frac{1}{2}$. Other descriptions are also slightly depreciated, and politics seem to be exercising a most unfavourable

Notices to Correspondents.

* * * Much inconvenience having arisen in consequence of several of the Numbers during the past year being out of print, we recommend that the Journal should be kept on receipt: it then forms an accumulating useful work of reference.

OXIDE OF MANGANESE.—In reply to an enquiry in the Journal, we can give any information required as to Oxide of Manganese.—JOHN MACQUEEN AND SON: Old Jersey Chambers.

STRAITS TIN.—"A." (The Hague).—There are no books in English in which the matter is more than incidentally referred to; but any of the Amsterdam brokers could, no doubt, supply all the information desired. Probably the reports of the Handelsmaatschappij would contain most of the particulars sought; also the Zeitschrift für Berg-Hütten-und Salinenwesen, and perhaps the Österreich Zeitschrift für Berg-und Hüttenwesen.

ASBESTOS.—"A." "Constant Reader" would be glad to be informed by any of your numerous correspondents where Asbestos is obtainable in quantities?

SHARE DEALING.—We never interfere in the sale or purchase of shares; neither do we recommend any particular mine for investment or speculation, or broker through whom business should be transacted. The addresses of most of the latter appear in our advertising columns.

Receipts.—"Empressario" (Maidenhead, Nov. 19).—"D. R." (Bristol).—"P. M." (Glasgow).—The letter of a "Holder of 300 Shares in the North Laxey Lead Mine" is too personal for publication; the writer should attend the next meeting, and state his opinions—"Shareholder" (Wheal Uny).—"Constant Reader" (Glasgow). Next week—"L. B." (Plymouth).—"Shareholder" (Roman Gravel).—"Shareholder" (Old Treburgett). Read a letter among the Original Correspondence—"Viator" (Dundee) should write to the Secretary, who will readily forward the information.

THE MINING JOURNAL,

Railway and Commercial Gazette.

LONDON, DECEMBER 1, 1877.

THE RATING OF METALLIFEROUS MINES.

Since the Act for the rating of metalliferous mines came into operation it appears that different methods have been adopted in the various districts for arriving at the rateable value of every description of mining property. The consequence is that in some instances the rates appear to be very moderate in comparison with others. Not only is this the case but mines in any parish belonging to the Crown are exempt from the payment of rates. Thus we find that in the Derbyshire lead mining districts the amount of rates paid by the lessees of such mines is comparatively trifling, which is certainly a great advantage. Why, however, the mines belonging to the Crown should be exempt from rates we are not informed, nor can we see any substantial ground why they should be treated differently to those belonging to ordinary individuals. To our thinking all mines should be rated upon a uniform system on a simple principle, for as it is large sums of money are expended in obtaining the services of mining experts to determine the rateable value of mines of every description. The results, however, are so very unsatisfactory that appeals are constantly made to the law courts at a heavy cost to the appellants, and the conclusions arrived at by the valuers are frequently upset, but this is only effected at a serious loss to both sides. In some instances in the same county we find that the rateable value of the mines is fixed by making an allowance of 25 per cent. in respect to shaftage and fixed plant, and in others the rule is to take the estimated gross receipts, and deduct the estimated working expenses and allowance for tenant's capital. In estimating by these two opposite processes the results vary a great deal, so that one set of owners are rated much easier than others. This, of course, leads to frequent complaints, and Boards of Guardians having employed what they consider a competent valuer do not as a rule alter the rate fixed by such a person unless compelled to do so by the force of law. What, then, is required is a system that can be easily understood and carried out by the overseers themselves without the intervention of professional valuers. The Rating Act of 1874 is now adopted at most of the tin and other mines in Cornwall, but according to the returns there are some mines in Liskeard where the rate is made according to the minimum rent paid to the landlord for the year ended the previous Dec. 31. The difference in the mode of rating of mines other than coal is very great.

In Cornwall the ironstone mines in St. Colomb Major are assessed on the returns of ore sold, 15 per cent. in two instances being deducted for repairs to mine buildings, whilst at Truro no deductions whatever are made. With respect to copper, tin, and lead mines, in Liskeard the gross estimated rental is arrived at according to the dues on the ores sold, and this is the course adopted at the tin and copper streams, which were rated before the passing of the Act of 1874. Cumberland is well known for its valuable hematite mines, those at Bootle being rated after a reduction has been made for rates, taxes, repairs, and insurance of buildings, whilst at Whitehaven a reduction of 25 per cent. is made in respect to shaftage, &c. In Devon there are ironstone, tin, and other mines, and in two instances the gross estimated rental is arrived at from the annual return, 33 per cent. on 80% for water-wheels being deducted to arrive at the rateable value. At most of the mines, however, no deductions are made from the gross estimated rental, which is arrived at in various ways. Some have been assessed on the mine dues, others on their minimum rent, and others again on what it was considered they would reasonably let at. At Tonnes the rating is effected according to the rules laid down by section 7 of the Rating Act, 1874, applicable to the special circumstances of the case.

Durham, it appears, can only boast of one small lead mine, which is rated according to the amount of rent paid by the lessee, from which nothing is taken off. The ironstone mines, however, are rated upon 7d. per ton on the output of the previous year, from which an allowance of 5 per cent. is made. This is very different from Lancashire, where the gross estimated rental (from which no deduction is made for determining the rateable value) is arrived at by taking 2s. 3d. per ton on ore raised, 2s. being for royalty and 3d. per ton for engines, tramways, and other appurtenances. This is the rule at Barrow-in-Furness. At Ulverston, however, there is no deduction from gross to rateable value, it having been agreed by the proprietors of the hematite mines and the assessment committee that the ores should be charged 2s. 3d. per ton raised and disposed of. In Monmouth, in one instance the gross estimated rental is fixed at 6d. per ton per annum, from which 25 per cent. is deducted in making the rateable value; at some of the other mines in the same county the gross rental is 6d. per ton on the ore raised, from which no deduction is made in estimating the rateable value. Northamptonshire has several ironstone mines in the Kettering and Towcester districts; the former were valued by Mr. HEDLEY, whose system he does not make known, whilst the gross rental of the latter is according to the royalty and surface value of the land. In Shropshire, the ironstone mines at Madeley are rated upon the returns of royalty or dead rent paid, from which 2½ per cent. is taken off in fixing the rateable value, whilst the Lillshall Company, at Newport, have agreed that the gross estimated rental should be assessed at 1425d., from which 10 per cent. is taken off to arrive at the rateable value.

The ironstone mines in Staffordshire are assessed in various ways, in some instances according to the quantity raised and the selling price, from the gross of which one-sixth is deducted, whilst in others one-tenth of the total value of the ore raised is fixed as the gross rental, from which one-fifth is allowed in making the rateable value. There are several iron mines in Worcestershire which appear to be rated the same as the collieries, the gross rental being on the basis of a royalty assumed by the assessor, for which deductions varying from 10 to 20 per cent. are made for arriving at the rateable value. The ironstone mines in Yorkshire are rated in several different ways. In the Leeds district the gross rental is taken at 10d. per man at some places, and at others according to the tonnage raised. In the North Riding the mines are rated at the tonnage price for which the mines would let. In South Wales, in Brecon, the gross rental of the ironstone mines is taken at 2s. per ton. In Glamorgan Mr. HEDLEY appears to have valued several of the mines. The lead mines in Mont-

gomeryshire have the gross rental reached by taking the total amount of dues and fixed rent, if any, payable, and in some instances the machinery, &c., are separately rented. The rateable value is the same as the gross rental, with some exceptions. From the figures and statements given above it will be seen how various and opposite are the modes of assessing our metalliferous mines, and the necessity for one general system.

LABOUR IN WALES.

Although some orders for rails are stated to have been received by several of the companies engaged in the manufacture of iron in South Wales, the general trade of that district appears to be in a deplorable condition, and the coal trade even seems to be going from bad to worse. The real cause of the troubles which now afflict Wales is, after all, the undocile, unreasonable attitude of the working classes of the Principality. If any proof were needed of this it is found in the fact that, although the Nant-y-Glo and Blaenau Ironworks Company has been unable to give its shareholders any dividend for the last four years, or even to meet its debenture interest since June, 1876, the company's colliers have refused to accept any reduction of wages. The inevitable result has been that large numbers of them have been discharged, and have been reduced in consequence to great misery. This, however, is no consolation to the capitalists who have embarked their *épargne* in the utterly unprofitable Nant-y-Glo and Blaenau Ironworks Company, which has been compelled from the force of adverse circumstances not only to suspend its production of iron, but also to greatly curtail its extraction of coal. Labour was defined by ADAM SMITH to be the source of all wealth; but disorderly, insubordinate, uncontrollable, unreasonable labour is not only not a source of wealth, but must infallibly be attended with loss to those who are weak enough to attempt to employ it.

In all directions we hear of stagnant trade, and we are naturally disposed to ask what are the causes of this almost unprecedented stagnation. These causes appear to us to be manifold. First of all there is and has been a sad waste of wealth in consequence of the bloated armaments unfortunately maintained by the principal nations of Europe. These bloated armaments not only involve a sad waste of wealth in themselves, but they are also productive of the still greater evil of sanguinary and exhausting wars. One of these wars is now being waged between Russia and Turkey, and this war, which is from every point of view a most miserable business, has undoubtedly helped to intensify and even to prolong the extraordinary depression which has for so many weary months weighed down European industry. The second cause of the remarkable stagnation of the times is the collapse of imaginary credit. Turkey has not been borrowing for legitimate purposes ever since she began to borrow in 1854. She has borrowed to gratify the pleasures of vicious Sultans, to enable her so-called Government to build costly ironclads, and to maintain an army disproportioned to the requirements and resources of the nation; but she has not borrowed—at any rate, to any serious or important extent—for the solid benefit of her population. The consequence has been that she has cumulated at last to a long series of crushing deficits, and her imaginary credit is now represented by a huge mass of unpaid coupons. It may be said that Turkey is a very severe illustration of our argument, but other countries have, unfortunately, also developed a policy of imaginary credit to a greater or less extent, and the result has been that hundreds of millions of good English money are now altogether unproductive of interest, while other Governmental bonds upon which interest is still paid are in rather a rickety condition. This collapse of imaginary credit has, of course, a most serious influence upon enterprise of all kinds, and even upon enterprise of a really legitimate character. But the third and great cause of our existing business difficulties is undoubtedly the undocile, untractable attitude of the working classes. JACK now considers himself as good as his master, and perhaps a good deal better. But while capital is bound to assume a kind and considerate attitude towards labour, and to accord it the largest possible remuneration, labour must be the servant—the docile, willing, obliging servant—of capital. This is the only union of labour and capital which can be attended with really profitable and useful results. It is, perhaps, a hard lesson to learn this, but it must be learnt in this England of ours, otherwise we shall continue to have Oxford professors lecturing upon our decadence as an industrial nation.

MINERS, AND THEIR RIGHTS.

The very important question as to whether miners have the power legally to restrict the production of a colliery at which they are employed, and so become the masters of its commercial character, was brought under the notice of the Barnsley Bench of Magistrates on Friday, the 23rd ult. The issues were clear, definite, and in no way disputed by the defendants. Acting on the advice of Mr. MACDONALD, the men at the Lund Hill Colliery, without, we understand, taking counsel with the executive of the Miners' Association, to which they belong, determined to only get a certain quantity of coal daily. Having carried out that object for several days, 125 of them were summoned for a breach of contract under the Employers and Workmen Act, seeing that they did not carry out the terms of the agreement entered into by them with the owners of the colliery at the time they were engaged, and compensation for loss in each case was claimed. On behalf of the defendants it was argued by their counsel that the contract entered into by them with their employers was void, seeing that there was no obligation on the part of the plaintiffs to find work for the men. The contract, therefore, was void, he contended, for want of mutuality, and in support of that proposition he quoted a well-known Sheffield case—*Sykes v. Dixon*—in which the defendants signed an agreement to work for the plaintiff, but to give him 12 months' notice before leaving. That contract was held by the judges to be void for want of mutuality. The present case, it was pointed out, was entirely different from that, for the men, if dissatisfied with their position, could leave on giving 14 days' notice, whilst there were special terms in the agreements made with the men at Lund Hill with regard to their daily work, and the objection was at once over-ruled. To us it appears to be a monstrous proposition that a man can occupy a certain working place, that machinery, horses, and labourers shall be attending upon him at a heavy cost daily for the purpose of aiding him in performing certain duties, and that he can either work or play, just as he pleases, without in any way being accountable to his employers. If such were the law, then a body of men, by so acting, would be able in a very short time to ruin almost any of our colliery owners. But we believe, with the Barnsley magistrates, that by no stretch of special pleading can such a doctrine be held by any of our judges, or was ever intended by the members of our Legislature—excepting, indeed, in the person of one member of that distinguished body could such an absurdity be entertained. As we have on several occasions pointed out, working men are not apprentices, and when dissatisfied with an employer they have only to give the legal notice and go elsewhere. But at Lund Hill the men agreed not to work themselves, and, consequently, by occupying their places would not allow others to do so.

Were it not a serious matter for the owners, one could almost smile at the absurdity of a number of ignorant men assuming such powers as to tell their employers that they should serve such and such customers only with such a quantity of coal as met their views. This is the correct reading of the action taken by the men, and would have been carried out for an indefinite period had they been allowed their own way. In the one case partly heard, it was stated that the man WHITEFIELD could get from 6 to 8 tons of coal per day—6 tons, in fact, being a very easy day's work—and in one week he got as much as 55 tons, but on the 9th ult. in carrying out the principle of restriction he was only credited with 8½ cwt. This of course became a serious matter to the owner of the colliery, so that were the same plan carried out generally there would be a very heavy loss indeed. This was shown in a variety of ways; amongst others it was proved that the cost of drawing 4000 tons—about a week's work—was 2s. 8½d. per ton, and the necessary machinery, men, and appliances have to be kept for raising that quantity

whether the men worked or not. But that they are obliged to do a fair day's work, in opposition to the views of Mr. MACDONALD, we think does not admit of the slightest doubt, and to ensure this colliery-owners have made the agreements between them and their employees as binding as they can be made. At Lund Hill, as well as at other coal mines, the men on being engaged either sign their names in a book kept for the purpose, and duly witnessed, or make their mark. In addition to that they have a copy of the rules and bye-laws delivered to them for their future guidance, and which they agree to be bound by and carry out. In the 8th bye-law relating to Lund Hill it is stated that "Every workman will be required to perform a fair day's work on each and every working day, except when prevented by illness, or exempt by special consent in writing from the manager or undersurveyor." If such a rule is not sufficiently strong and binding, and opposed to anything in the shape of restriction, we cannot see how words can be framed to make it more so. Nor can we see how the most astute counsel can get over a law evidently framed by a legal authority, and one of the owners of Lund Hill has a reputation as a lawyer second to none in the district. That the men will have to pay compensation for the loss sustained by their employers we believe there is not the slightest doubt, so that the men will have gained experience by paying for it, and be taught how dangerous it is to place the slightest confidence in the pernicious counsels with respect to their rights and privileges even when they emanate from one who is a member of the Legislature.

MANCHESTER GEOLOGICAL SOCIETY.—The monthly meeting of members was held on Tuesday, when Mr. W. J. Grimshaw presided, in the absence of Prof. Boyd Dawkins. Mr. J. E. Forbes, one of the honorary secretaries, read a letter from the Registrar of the Owens College, enclosing a copy of the regulations which the Council have made for the admission of students and the public to the geological collections. Mr. C. E. De Rance, F.G.S., of Her Majesty's Geological Survey, was unanimously elected an honorary member of the Society, and Mr. T. Livesey, jun., of Hatherlow, was elected an ordinary member. Mr. J. S. Martin, one of the honorary secretaries, read a short paper on the occurrence of a fossil spider *architarbus sub ocellis*, found in the coal measures of North-East Lancashire, by Mr. D. Morris, F.G.S., with regard to which Mr. Forbes stated that the discoverer (who is at present in Ceylon) had promised a full description for the Society's Transactions at an early date. Mr. Martin also read a paper, communicated by Mr. G. H. Kinahan, M.R.I.A., on Quartzite Rocks.

MINING IN THE ISLE OF MAN.—We learn that the Manx Silver-lead (the Ohio) Mine, in the parish of Baldwin, is looking exceedingly well. A rare discovery in the vein in the 70 has been made, and it is stated that the returns will not be less than 25 tons per month. The liveliest satisfaction is evinced in this discovery, and hopes are expressed that a new career has been opened for the young mine here. The provisional directors of the Langness Mining Company have failed to float, and have returned the deposit money to the applicants for shares, with 5 per cent. Their honourable conduct has given great satisfaction, and it justifies what we stated in the Journal that few mines had been placed before the public more honestly, or with greater prospects of success. The adventurers are actively developing their property. The engine-shaft is down nearly 40 fms., and on Monday they commenced driving to the veins. The property is looking exceedingly well, and large discoveries are looked for in the course of a month or six weeks.

PIG-IRON.—Exports during the ten months ended Oct. 31:—

Year.	Tons.	Value.	Average per ton.
1875 ...	806,706	£2,977,308	73s. 6d.
1876 ...	760,815	2,406,342	63s. 0d.
1877 ...	758,127	2,180,449	57s. 6d.

THE ANTHRACITE COAL TRADE.—A letter in a contemporary states that "the main causes which have prevented anthracite coal from taking the very first position in the rank of steam generating fuel have been, to a very great extent, overcome by the use of 'Korting's Steam Jet Undergrate Blower,' and hollow fire-bars manufactured by Mr. T. W. Williams, Wellington Foundry, Swansea." The writer has in his possession a letter from a respectable firm in Swansea where these appliances have been in daily use over nine months, with the following important results, as compared with their previous experience of ordinary steam coals:—1. A saving of 25 per cent. in fuel. 2. 50 per cent. more steam produced. 3. The labour in stoking reduced to one half. 4. 75 per cent. less ashes. 5. Perfect freedom from smoke. 6. Fire-bars and blowers as perfect as they were when first fixed, about nine months ago.—T. L. DAVIES, Henthfield-place, Swansea.

COAL AND IRON IN THE UNITED STATES.—There has been a continued steady demand for all the leading makers of steel at Pittsburgh, manufacturers appear busy, and it is expected that this will continue to be the case during the remainder of the year. The demand for wrought-pipe has been active at Pittsburgh for some time past; the National Tubeworks recently shipped 172 carloads in nine days. As regards scrap-iron, old rails have been somewhat firmer at Pittsburgh, but prices remain about as last quoted. There has been rather more activity in coke in the Pittsburgh district; as regards coal, the miners at a meeting at McKeesport last week fixed the price for mining at 3 cents per bushel. Whether the employers will agree to pay the rate thus demanded remains to be seen; in some respects, however, the situation is favourable to the miners, as stocks in most of the western and southern markets are light, and prices have been advanced. Messrs. W. Cramp and Sons, of Philadelphia, have just closed a contract with the Pacific Coast Navigation Company for a large steamer for service between San Francisco and Portland, Oregon. The steamer will be 300 ft. in length, 36 ft. 6 in. beam, and 28 ft. depth of hold, and she will be fitted with engines of 1800 horse power indicated. The aggregate production of anthracite and bituminous coal in Pennsylvania to Oct. 27 this year amounted to 18,971,247 tons, as compared with 17,544,065 tons in the corresponding period of 1876.

MOULDS FOR CONCRETE BLOCKS.—The invention of Mr. J. C. SELLARS, of Birkenhead, relates to moulds and frames to be used in the formation of concrete blocks and structures, and has for its object to ensure that the concrete shall not adhere to the surfaces of such moulds or frames, and hence the surface shall present a smooth, neat, and finished appearance. Under the first part of his invention he makes the moulds of paraffine or similar wax-like substance, unacted upon by alkaline matter, mixed with sand, charcoal, or other finely divided material. In some cases paraffine alone may be used. These moulds are suitable for forming ornamental blocks, or blocks of various patterns used in building operations, of which a large number is not required. If it is desired to obtain a very smooth surface a stream of hot air or steam may be passed over the surface of the mould before the concrete is filled in. Under the second part he forms moulds or frames of timber, metal, or rigid material the surfaces of which are coated with paraffine or other wax-like substance, either with or without admixture with sand, charcoal, or other finely divided material. Under the third part he forms the mould of a rigid material, and covers the surfaces with lac, mastic, or other varnish. Under the fourth part he forms the moulds of metal, and japans or enamels the surfaces.

MAGNETIC SAFETY-LAMP.—The improvement in miners' safety-lamps invented by Mr. J. B. CLOSSON, of Paris, has reference to the construction of the fastening mechanism, so that the rod or pin which, with other parts is enclosed, is in a suitable box, and is by a spring caused to enter a recess in the upper or removable part of the lantern for locking; it is for unlocking depressed mechanically by a partial turn of the said upper or removable part in the same direction as for closing the said rod or pin, after having been so depressed, being kept in its lowered position during the opening of the lamp by the operation of a magnet applied externally to the box, and which, through a novel arrangement, transmits magnetic action to mechanism within the box, which operates to retain the rod or pin, and other parts, in the position to which they have been

mechanically moved, thus leaving the upper or removable part free to be unscrewed and removed. The essential improvement consists in bringing the magnet within the lamp closer to the casing, so as to ensure the operation of the unlocking magnet; otherwise the lamp is identical with Bidder's magnetic lamp, and used in the same way.

REPORT FROM CORNWALL.

Nov. 29.—We are not very likely to see any very decided step taken in regard to mining affairs now for three or four weeks. The Christmas season is notoriously one of extreme inactivity, and there is no reason why it should prove otherwise now. Matters have, however, again improved somewhat since our last, and probably we shall see this position more than sustained before the end of the year has arrived, but more than this we can hardly look for. It seems very likely, too, that ere long the war in the East will come to an end. There must be a marvellous turn in the tide of Russian successes if it is to continue. And when that is over a further improvement in general trade may be anticipated.

We are glad to find that the Exhibition of the Cornwall Mining Institute has proved so successful all round. An exhibition may be very successful in a practical point of view, and far from successful in a pecuniary sense. However, at Camborne both results have been attained. The attendance was very large—so large that it was kept open three days instead of two—and every way the results have been most satisfactory, so that we may hope this new venture has been enduringly launched. The more information can be diffused on practical mining, and the greater collision of opinion on practical points can be secured, the more likely is good to result. In fact, no other result than good can come out of such an effort.

The weather is exceedingly rough, and the rainfall very heavy and continuous, which points, of course, in the direction of heavy pumping charges. Most of our mines we take it are, however, well prepared to meet this extra burden. Of late years a great deal more attention has been paid to pitwork than used to be the case, and coal is now at a fair and moderate price. Of course we do not consider in the face of the duty returns that the adventurers generally do get all their return out of the expenditure in this direction that they ought to get, but still it is satisfactory to observe an improvement. One of the most practical lessons taught at the Mining Institute Exhibition was the necessity of looking well to the water used in steam boilers, as proved by the remarkable case of boiler incrustations there exhibited. The fouler a boiler, of course, the greater the loss of power.

Probably before long we shall have more definite information on the extent and character of the distress from which the mining districts of the county have been alleed to be suffering, but which we have always held to be grossly, if innocently because ignorantly, exaggerated. Mr. T. S. Bolitho has revived the old County Relief Committee, which has a considerable balance—over 1000*l.*—in hand, and a meeting was held at Truro on Monday. Distress in any form cannot be deemed a pleasing subject, or it would have been amusing to hear the immense variety of opinions expressed as to the distress, its character, and extent, ranging almost from the view that there was practically no distress at all requiring a special effort, either in the county or out of it, to the warmly expressed conviction that Cornwall had never seen more distressful times. Eventually the committee adopted what will be more generally conceded to be a very wise course. They resolved upon making independent enquiry into the subject, and in the meantime to administer such relief as was seen to be most urgently required. It is very evident that in this matter there is a considerable variation between different localities, and it is very clear likewise that those who feel the pinch of the times most are not those who are the loudest in their outcries about it. Great discretion is, therefore, needed in the administration of relief, and nothing has transpired to induce us to alter our opinion that the county is quite sufficient and able to deal with this matter without turning it into an appeal, after the Indian famine fashion, as did Miss Buckland.

The Vice-Warden of the Stannaries has had an important question of mining practice before him concerning the mode of dealing with relinquishing shareholders. The point raised was decided by a jury, who were themselves quite alive to the importance of the question and practically acquainted with its bearings. At Treleigh Wood, in February, 1876, a resolution was passed to change the partnership, and Mr. Watson gave place to Mr. T. B. Laws. Mr. Watson and several others, just prior to the meeting, relinquished their shares, and Mr. Laws made up an account and called upon the relinquishing shareholders to pay their share of the liabilities up to the end of the month in which they resigned. They disputed the account and the valuation, and contended that they ought to have credit for their share of the value of the machinery, materials, and ore on the mine, as a set off against their liabilities, before they paid any money. The case had been brought before a superior court in London, and afterwards withdrawn. Mr. Marks appeared for Mr. Watson, who relinquished 600*l.*; Mr. J. Watson, 390*l.*; Mr. James R. Tate, 65*l.*; and Mr. J. B. White, 60 shares. At the date of the relinquishment the mine was divided into 955 shares, and the balance of liability at the end of February, 1876, was calculated at 34*l.* 10*s.* 11*d.*, and the defendants' pretensions were as follows:—Mr. Risley, 41*l.*; Mr. Watson, 26*l.*; Mr. J. R. Tate, 4*l.*; and Mr. J. B. White, 17*l.*—Mr. Marks contended that relinquishing shareholders were bound to pay up their liabilities at once, when an account was made out showing that liability. If there was anything coming to the defendant in respect of the machinery they were bound, according to custom, to wait two years for it. They could not put their interest in these as an immediate set off. It had been decided in that Court that a shareholder was not entitled to his share in the materials till the end of two years. The contention of the defence was that if the relinquishing shareholder owed 1000*l.* for liabilities, and was entitled to 500*l.* in respect of machinery and materials, that that could be set against it, and that he was only called upon to pay 500*l.*; but his (Mr. Marks's) contention was that they must pay the 1000*l.*, and wait till the end of the two years for the 500*l.*. He considered this was only just and reasonable towards the continuing shareholders, as it gave them time to look round and see what the mine was going to do. He also contended that the valuation of the machinery and materials, under such circumstances, should be made as if they were about to be sold by auction. Mr. T. B. Laws said it had always been his practice to call upon the relinquishing shareholder to pay his portion of the liabilities at once, and not to allow a set off the value of materials, or pay that until the end of two years. Mr. J. R. Tate and he had always followed the same plan. Mr. Edward Mitchell, of Truro, and Capt. T. Mitchell, gave similar evidence. On the other side, Mr. Henry Rogers, of Helston, said the practice he had always followed was to ascertain the amount of the liabilities, and the value of the assets, in the assets including cash in hand, all calls (whether received or not), tin leavings on the mine, and the general machinery and fittings; and if there was any money due to the relinquishing shareholders he should consider that the pursuer might take the advantage of the two years, according to the custom; but it had been his practice to settle with shareholders within two years. Where money was due from assets and liabilities to the end of the current month, and ask the relinquishing shareholders simply to pay the balance due. He had settled fifty accounts in that way during the last eighteen months. He had never called upon a relinquishing shareholder to pay the gross share of the liability without deducting his interest in the materials, as he did not think it would be just, because in two years the co-venturers might become insolvent, and the man would lose all his money. Mr. Walter Pike, Mr. Thomas Pryor, Mr. J. W. Tyacke, and Mr. Abbott, also gave similar evidence, and the jury after a short deliberation returned a unanimous verdict for the defendants.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

Nov. 28.—Little change has taken place in the trade of Derbyshire since my last report, the most important feature being the notice given to a number of men at one of the leading establishments to leave. This is understood to be the result of the bad trade which has prevailed for a considerable time past, and without much prospect of its improving. Mining operations are going on much as usual, but the production of lead ore is still very moderate, and there is little likelihood of its increasing, for no one appears to care about investing in the lead mines of Derbyshire, although at one time they were rather popular. At the collieries a steady business is being done in house coal, and a full average tonnage is being sent over the Midland to the Metropolis. Prices, however, have remained stationary so far as consumers are concerned, whilst we have heard of no changes at the pits. It may be said that it is a long time since coal at this period of the year was so cheap in London as it is now, for it is fully as cheap as it was in the summer months. This shows plainly that coal in London is plentiful, otherwise the merchants would before this have managed to force an advance. As it is, Silkeston is delivered to the colliers of consumers at from 2*s.* 2*d.* to 2*s.* 4*d.* per ton. The Midland is also taking Silkestones from Derbyshire westward as far as Bristol and Bath. Steam coal, however, is not in such request as it has been, whilst there has been no improvement with respect to engine fuel and small coal generally.

In Sheffield quietness still rules, but there is a little more activity in some two or three branches. As stated on former occasions the Bessemer rail makers are as busy as they well can be, and this state of affairs is likely to continue for some time, for several large orders are in hand for the firm. For table and other cutlery there has been a better demand for both America and some of our own colonies, but most of the manufacturers have large stocks to fall back upon, which they will take advantage of. Ordinary cast-steel is still in moderate request, whilst foundry material is being turned out to the extent of keeping the hands, as a rule, from going on short time. In the district some orders have been received for plates, the business doing in which has been very quiet for a long time. Ordinary iron rails are now not much inquired for, and the engine works and machine shops are far from being busy. Makers of silver-plated goods, and some descriptions of fancy work, are doing very well, getting ready for the Christmas demand.

In the Barnsley district matters have been somewhat exciting of late, what with strikes, limitation of production of coal, and disputes of one sort or another amongst the mining body. At the Dodworth Silkeston Colliery the men have been out for about seven months, and have managed so far. They show no disposition whatever to start again. Consequently the managing director has determined to work the colliery with non-Unionists. On Monday, at a meeting of the Council of the Miners' Association, at Barnsley, it was agreed that the men should resume work at 1*s.* 8*d.* per ton for coal and slack, provided the manager would agree to have the points in dispute referred to Mr. Mundella and some others. On Tuesday about 35 men arrived from South Wales and Lancashire at Dodworth, and were at once taken to the colliery adjoining, where every provision was made for them. On Wednesday they went into the village, and getting along with some of the old hands, they did not return to the colliery. Of course they stated that they were not aware there was a strike, otherwise they would not have come into Yorkshire. But the fact is in all districts, or nearly so, there are a number of young men who prefer play to work, and are always ready for a journey to some new and distant place, well knowing that if there is a strike they will be sent back again by the men who are out, whilst if there is not they work a short time so as to get sufficient money to return home. In South Yorkshire, however, it may be said that the wages are considerably higher than in South Wales, or, indeed, in any other part of the kingdom, so that the men would have found it to their advantage to have stopped at Dodworth. At Corton Wood the men are still out, although it was understood that an arrangement had been come to two or three weeks ago, by which work was to be resumed. It is, however, expected that arrangements will shortly be come to. The case arising out of the limitation of the output of coal at the Lund Hill Colliery, near Barnsley, will be resumed before the magistrates on Friday, when it is expected that one case will be disposed of, and that may be the means of settling the others.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

Nov. 29.—There is no alteration calling for note upon the week in the coal or iron trades of either the northern or the southern portions of the county. Domestic fuel is in improved and improving demand. Pig-iron is strengthened by the action of North of England makers. The work at the mills and forges is under the average. Best iron is most sought after.

A private conference has been held between the Chairman and the secretary of the Iron Trade Arbitration Board, the operatives' secretary, and the Vice-Chairman of the board, to consider the advisability of extending the operations of the board to North Staffordshire and to Shropshire, and of making efforts to secure the co-operation of those employers and workmen who at present stand aloof. Nothing very definite has yet been resolved upon, but the first move will, it is believed, come from the men.

The most prominent feature of the stock market this week is in connection with the Cannoek and Huntington Colliery Company (Limited). The 10*l.* shares of this concern have been bought for 2*l.*, and sellers now remain at 7*d.*, buyers at 8*d.* A week or so ago a call of 2*l.* was paid upon this property. Other colliery shares show no conspicuous alteration, and are dull. Iron companies' property is even less active than that of mining concerns.

Important proceedings under the Mines Regulation Act were brought by Mr. J. P. Baker, Government Inspector for this district, before the Sedgley magistrates on Monday. On August 24 two strikers were killed at the Moat Colliery, Tipton, by being precipitated to the bottom of the shaft as they were being drawn up, through an alleged defect in the brake. A coroner's jury returned a verdict of manslaughter against Mr. Elijah Davies (the manager), the colliery engineer, the engine tender, and another person connected with the colliery, but the bills were ignored by the Grand Jury, and the defendants were acquitted. On Monday Mr. Davies was charged with three breaches of the Act, and the other three persons implicated were between them charged with eight offences. The case against Mr. Davies was heard, and his counsel took three objections to a conviction.—1. That the summonses had not been issued within the required three months.—2. That the Bench had virtually tried the present proceedings were void. The counsel for the prosecution combated these arguments, but the Bench, agreeing with the defendant's counsel, dismissed the charges. A case for a higher court was applied for, but the Bench upon this point reserved their determination.

Two other fatal accidents through falls of coal have occurred at Dudley. Since my last a handsman has been killed, and three other men only narrowly escaped through a heavy fall of coal in Earl Dudley's 28 Saltwell's Colliery, Darby end, and a pikeman has been killed, another pikeman has been injured, and two other men had narrow escapes through the fall of some 7 or 8 tons of coal at the Grace Mary New Colliery (of Messrs. Minton) when a tree was being removed.

Protracted private litigation between the trustees of the Willenhall Chapelry and the Bentley Colliery Company has terminated, so far as it relates to the facts of the case, in favour of the company, which was composed of a few local capitalists. But the action was formally between the Chapelry Trustees and Mr. Wm. Blakemore, who was the original lessee, and formed the company himself, becoming a leaving proprietor, and accepting the position of manager and secretary. The term of the lease required that 2000*l.* should be expended in proving the property, which lies between Willenhall and Bentley. Much more, however, than 2000*l.* was spent; indeed, considerably more than 10 000*l.*, which was the capital of the company, and the lease was thrown up, for the chief minerals gave out. Protracted arbitration proceedings before arbitrators, and Mr. H. Lloyd, barrister, as umpire, were conducted in Wolverhampton and in Birmingham, the trustees contending mainly that "in proving" 2000*l.* had not been spent, but that, on the contrary, the money which had been spent was spent in working, and that the lease could not be thrown up. Mr. H. Lloyd has, upon the facts, found wholly for Mr. Blakemore. He finds that the mines could not be worked at a profit, and that as much as 26 000*l.* was spent upon the property. Mr. H. Lloyd has, however, granted "a case" upon a legal point. Mr. Blakemore was congratulated on "Change this afternoon by numerous colliery lessees upon the result thus far of the litigation. The prosecution for intimidation arising out of the North Staffordshire strike, to which I last week referred, has resulted in two colliers being fined each 5*l.* and costs.

A simple and handy contrivance called the Gradometer has been made to answer the same purpose as a clinometer in measuring the angles of inclines, the dip of strata, gradient of roads, &c. The gradometer, however, shows more than a clinometer. To an ordinary spirit level a slide rule is attached, which when not in use lies in a groove in the plane of the level, but when used is placed in a vertical position at the end of the level; this slide rule is the same length as the level, and is graduated on one side with 36 equal parts, showing the gradient in inches per yard, and on the other corresponding inclination in degrees of the quadrant. Thus, without the use of either plumb-line or circular arc, this instrument will show at a glance the gradient of any place which forms an angle

with the horizon. The instrument is invented by Mr. W. Fairley, mining engineer, Bloxwich.

TRADE OF THE TYNE AND WEAR.

Nov. 29.—The shipments of house coal have only been moderate lately, the mild winter having evidently had the effect of reducing the demand. Shipments of gas coal and coke, &c., have been large, especially at the Tyne Docks. Cargoes of gas coal continue to be sent to America in spite of the import duty charged. In Durham the miners are in some cases working full time, but the majority are only employed about from four to five days per week. The Tremdon Colliery has been got to work again, the cause of the stoppage having been financial difficulties into which the late company had fallen. The works have now been started by the original proprietor—Mr. Wood. Another colliery has been stopped near Tow Law, near Durham.

A number of men from Northumberland have got employment at the new works in Durham, but great numbers of men are to be seen daily in search of work. The coke trade is pretty firm at late rates, and there is no change in quotations. The periodical returns of the accountants appointed by the Durham Colliery Owners' Association and the Durham Mines Association have again been made; they give the selling price of coal in the county; they find the result to be that the average selling price of coal per ton for the four months closing October—that is of all the coal brought to bank in the associated collieries—is 5*s.* 2*d.* per ton, thus showing a decrease of 1*d.* per ton since the investigation four months previously; this is, of course, a decrease, but miners' wages being at the lowest figure in the sliding scale are not affected.

The Coal Trade in Northumberland continues extremely depressed. A few works at the north end of the district are employed full time, but many are not even working half time. Under these circumstances the masters can only reduce the wages of the men, or otherwise close the pits. A notice has been sent by the coal trade executive to the Union officials that they (the masters) are obliged to ask for a reduction in the tonnage prices of the coal hewers of 12*s.* per cent., and it is expected that a meeting will take place between the parties on Saturday to discuss the question. At the same time, all other men employed on the works, exclusive of hewers, engemen and mechanics, have received notice—14 days from Monday last—that a reduction will be made in their wages of 6*d.* per day. Colliery officials also have been served with a notice that a reduction will be made in all salaries. All this, of course, is very trying for the men as they have made concessions lately, and those who are in work are badly employed, but it must be borne in mind that the wages of the miners and all classes of men employed at these works have been and still are higher than the wages of the men in Durham and other districts. It would seem that stern necessity will cause these rates to be equalised all over the district. It is also intended to reduce the wages of engemen and mechanics.

The foundation of new science and art schools was laid in Newcastle yesterday by W. Cowen, M.P. The object of these schools is to provide a high school for 600 students, and while the provision for science and art instruction will be ample other objects are aimed at—it will be a school to connect the primary schools of the whole district with the University. There are now 360 students enrolled as members here, as schools have been in existence some time under the direction of Dr. Rutherford and others. The pupil teachers and paid monitors of all the public elementary schools on the Tyne are admitted free to the benefits of this institution, and the charge to pupils is 1*s.* per week. Ten elementary school scholarships of the annual value of 10*l.*, and ten science and art scholarships of the annual value of 15*l.*, are to be competed for in May next year. The school is for girls as well as boys, and the education to be given is expected, if continued long enough, to fit them to go in for matriculation in the London University. The new building comprises a lecture hall, and large science class rooms, and also chemical and physical laboratories. The total cost will be 3500*l.*, and this is expected to be raised by private contributions. These schools are self-supporting, no Government aid having been sought or received. This is certainly creditable to the people of Newcastle, who appear determined to keep pace with the times by giving the means for higher education to the young. A movement seems to receive much support at present to found universities, but the popular Dean of Durham—Dr. Lake—favours the idea of forming colleges or halls in great provincial towns, in connection with the large universities, such as Cambridge, London, &c. The College of Science lately founded in Newcastle in connection with the University of Durham is likely to prove of great advantage to the mining and manufacturing interests of this great district.

A general meeting of the North of England Institute of Mining and Mechanical Engineers will be held on Saturday, when the following papers will be read:—"On the Intrusion of the Whin Sill," by Mr. David Burns, C.E. "Notes on the Geology of the Bristol Coal Field, with Special Reference to the Gloucestershire Basin," by Mr. Walter Saise, F.C.S. The following paper will be open for discussion:—"On the Harkers Rocks, near Bamfargh," by Mr. G. A. Lebour, F.G.S., and Mr. Mark Fryar.

REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

Nov. 28.—I noticed in a former report the stagnation in the trade in fluxing limestone, owing to the great depression in the iron trade. The trade in agricultural lime has been equally bad this last year. Scarcely a fourth of the usual quantity of lime has been used on the land these two years. The cause for this is to be found in the scarcity of money among farmers, owing to a succession of harvests below the average. A steady little trade is being done near the town of Holywell in the manufacture of cements and hydraulic lime from the black beds at the summit of the limestone of that neighbourhood. A good deal of coal from South Wales finds its way into the district for lime burning in ordinary times, but of late sellers find it difficult to obtain orders sufficient to cover their expenses.

Operations at the Great Holway Mine were begun on Monday under the auspices of the new company. Roskell's shaft is to be sunk 80 yards below the adit level, at which depth it is expected it will strike the hole in the limestone beds. The old workings above the adit were for the most part in the chert beds of the millstone grit. Powerful pumping machinery is to be erected, as the ground below the adit is full of water. Other works are in contemplation by which the water which has been dammed up in some of the upper workings is to be released, and some good ore set free. On the occasion of a recent visit I found some of these shallow workings let at double royalty to a few miners, who make a living by raising ore on their own account. The Gorseid and Merlyn Mines have a good quantity of ore dressed and in the course of dressing. Thirty miners and twelve dressers passed 450 tons through their hands last month without machinery. The absence of machinery is a noticeable feature in the principal paying lead mines of Flintshire. At North Hendre the lumps of ore are hand-dressed, and sold whole for potter's use. At Gorseid all the ore is hand-broken and jigged on account of the silver contained.

Mr. Whalley, M.P. for Peterborough, is the defendant in a lawsuit which is being tried as I write, and which I may notice next week. The honourable gentleman is the owner of considerable mineral property in the neighbourhood of Raebon. A stone quarry in the millstone grit at Garth-Frevor, owned by him, is just now being opened out on a considerable scale, and has had a connection made with the Great Western Railway. The stone is a good building stone, and is particularly valuable where imperviousness to water and resistance to weight and wear is required. The slate quarries in the Llangollen district are busy, and new ones are being opened out. A tramway with inclines, just finished, connects the quarries near Moel Fwyn with the railway, and deliveries of slate are now being made at Oswestry Station from a new quarry opened out in Llwyn Mawr, Glyn Ceiriog. The same is true of the slate quarry at Llangynog, whose slates approach nearer the strength and hardness of the Carnarvonshire slates. New trials are being quietly prosecuted in the slate rocks of that neighbourhood, which I believe promise well.

The old lead mine at Llangynog makes steady returns of ore, and dressing-floors, with tramways and incline, are nearly completed at the Cwmadrog Lead Mine. An effort is being made to work the Phosphate Mine above this village more vigorously, and on a larger scale than hitherto. This step is said to be justified by the fact that the percentage of phosphate of lime has recently been brought up to 51½ per cent., and the mineral is comparatively free from the deleterious ingredients of oxide of iron and alumina. The whole neighbourhood of Llangynog only wants tramway accommodation to become a very important mineral district.

The greenstone (commonly called granite) paving sett trade of Carnarvonshire is good. Several new quarries have recently been opened up near Portmadoc; one on Moel-y-Gest has sent off several car-loads. The Queen's Quarry at Penmorfa, opposite the last, is laid out for a large production, and its tramways and incline connecting it with the Gorsedda and Portmadoc Junction Railway are completed, and it has delivered its first cargo of setts. The quarry is the property of a private gentleman—Mr. Hutchbury, F.G.S., M.E., of Bristol. The stone of this neighbourhood is rougher and better adapted for paving than the slippery stones of Penmaen and Clee Hills. It has little carbonate of lime, and it resists pressure. There is little to report of the lead mines of Cardiganshire, excepting that expectation is on the *qui vive* for results from the Cambrian Mines.

A series of scientific lectures are now being delivered by eminent scientific men in the old City of Chester, at which the audience number from 400 to 500 persons. A similar series of less pretension is also being delivered at Wrexham, in the centre of the North Wales mining district, which is also well attended. It is to be hoped, therefore, that the indifference shown for the most part by miners to the scientific and theoretic side of their important business is passing away.

REPORT FROM THE NORTH OF ENGLAND.

Nov. 20.—Makers of pig-iron in the Cleveland district continue to adhere to the rates resolved upon last week, having held another meeting on Monday to confirm their former agreement. Hence it has been difficult to purchase large parcels of iron for anything less than the regulation rates of 41s. for No. 3, and 40s. for No. 4 forge, less 1 per cent. It transpired on Tuesday that transactions had been effected on 'Change at less than these rates, owing to merchants wishing to diminish the stocks that some of them now hold, but the quantity of iron thus available must be very limited, inasmuch as the whole of the stock in warrant stores does not much exceed 30,000 tons, and the largest stocks at works are held by makers who are parties to the new arrangement.

Finishing it impossible to dispose of the Whessoe Ironworks at Durlington as a whole, the trustees of Mr. Thos. Vaughan decided to dismantle the premises, and expose to auction the whole of the plant and machinery. The sale came off on Wednesday of this week, and fairly good prices were obtained for most of the tools, a roller-turner's lathe with vertical engine selling for 86½, a pug mill with engine for 42½, a travelling crane for 32½, a punching machine for 30½, a six-wheeled coupled locomotive engine, with 12-in. outside cylinders, and weighing 20 tons with tanks and tender, was sold to a Middlesbrough dealer for 45½. This is said to have been the fifth locomotive made and run on the Stockton and Durlington Railway, the oldest in the kingdom, so that it must now be one of the most ancient in existence.

The Tees Commissioners have made certain important concessions to the traders on that river, but not yet sufficient to secure their consent to the application about to be made to Parliament for increased borrowing powers. The Commissioners intended originally to obtain powers to borrow a further sum of 350,000½, but they are now willing to reduce that amount to 100,000½, which they maintain to be absolutely essential to enable them to keep up the improvement of the river. They have thrown other "sops to Cerberus" by reducing the duty on steel rails from 6d to 4d. per ton, and on coal and coke from 2d. to 1d. per ton, but still the traders are not satisfied, and have resolved accordingly at a meeting held this week.

It has been ascertained by the accountants appointed to carry out the provisions of the sliding scale for the regulation of wages in the Durham coal trade that the total quantity of coal brought to bank by the associated coal owners in the county during the last four months only averaged 8s. 2½d. per ton, being a decline of 1d. per ton on the averaged realised selling price of the previous four months. As, however, the wages of the miners have already touched the minimum point allowed by the sliding scale, there will be no alteration in the rate of wages.

FOREIGN MINING AND METALLURGY.

The slight increase of activity noticed in some of the Belgian mechanical construction establishments by reason of war orders appears to have died away, and it is now generally admitted that the rolling-mills and workshops are in a position to undertake serious engagements. It must not be inferred from this observation that the various establishments absolutely want employment, but their production is only engaged for a short period in advance. Small contracts for iron with immediate delivery are more than ever the order of the day in Belgium. This is probably attributable to the fact that intermediaries have comparatively small stocks of iron on hand. Upon the whole, the general situation may be said to have become somewhat firmer, but it would probably be wrong to regard it as very solidly established, prices being the subject of a good deal of discussion. Capt. Eads, the American engineer who has acquired considerable reputation in connection with the improvement of the Mississippi, is maturing a project for the construction of a bridge over the Bosphorus between Pera and the Asiatic Coast. The length of the proposed bridge would be 6000 ft., and it would have 15 arches, one 745 ft. in length. The cost of this great bridge is estimated at about 3,000,000½ to 5,000,000½. Contracts are about to be let at Breslau by the Upper Silesian Railway for 25 goods engines and 10 locomotive tenders. Another contract is about to be let at Dresden for 100 baggage vans for the State railways. The John Cockerill Company has published an intimation to the effect that it has never abandoned the idea of leasing the Hungarian State works at Gyöngyör, for the simple reason that it never entertained it.

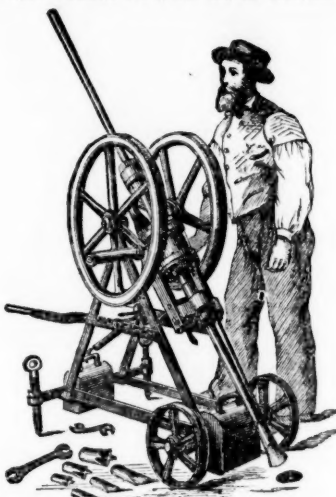
Stocks of coal have been rather increasing at some points in France in consequence of the exceptional mildness of the winter; but these stocks will be soon disposed of and reduced as soon as cold weather sets in. Nevertheless, freights have temporarily given way. A summary of the statistical work of the French Administration of Mines has just appeared for the years 1870, 1871, and 1872. The work is of some value, but it is desperately in arrears; however, a promise is given that the statistics of 1873, 1874, and 1875 shall appear in the course of 1878, and those of 1876 and 1877 in the course of 1879. The Belle-et-Bonne Collieries Company will pay on Dec. 20 a dividend for the first half of 1877 at the rate of 1½ s. per share.

The unsettled state of French politics continues to weigh heavily upon the French iron trade. Even building industry, which has been exceptionally active thus far this year, appears to be exhibiting symptoms of stagnation. The buildings for the Universal Exhibition of 1878 are now nearly finished, and no further demand of any importance can be anticipated on this head. The week may be said to have been throughout one of expectation; some small contracts have been reported, but they have been scarcely of sufficient importance to call for notice or mention. Prices have remained at about the same level; in the Nord they have, perhaps, exhibited a slight tendency to feebleness. In the Meurthe-et-Moselle refining pig has brought 2½ s. 6d. to 2½ s. 6d. per ton. The question of the construction of further cheap railways in France appears to be occupying some attention.

The further we advance into the winter the less there appears to be to report with reference to the Belgian coal trade, which remains in a feeble condition as regards both sales and prices. One cause for this state of things appears to be the fact that winter supplies have been laid in, while the winter itself has not made its appearance at present. Stocks are again accumulating, although the ex-

traction has been reduced as much as possible; it is obvious from this that the sales effected fall short of even the reduced production which is taking place. Paris is at present the most disappointing market with which Belgian coalowners have to deal; they have to contend in the French capital with great difficulties, and have to make considerable concessions, in consequence of the pressure of English and German competition. Metallurgical industry appears to be slightly reviving in Belgium, but orders for combustibles are, nevertheless, given out by Belgian ironmasters and Belgian iron companies with the greatest reserve.

NEW HAND-POWER ROCK DRILL.



It has constantly been remarked that one of the principal reasons that rock drills have not been generally introduced in mines is that the large cost of air-compressing machinery more than counterbalances any advantage that would otherwise result from their use, and there can be no doubt that where only one or two drills are required there is much to justify the statement. It was to meet this difficulty that the hand-power rock drill was designed by Messrs. F. B. Jordan and Son, and for simplicity it leaves little to be desired. Steam-power and expensive machinery are, of course, dispensed with, and the drill appears unlikely to get out of order, except from absolute wear. The drill will afford a ready and convenient means of drilling blast holes in many cases where the ordinary rock drill would be altogether inadvisable, and will give a considerably higher speed than hand boring, while avoiding the heavy outlay requisite in the application of power drilling plant driven by steam or compressed air, as well as the necessary staff of skilled labour. The chief advantages of the hand-power drill are that it is complete in itself, the total cost being but a fraction when compared with other plant now in use for the same purpose. It occupies but small space, requires no external connection, and may, therefore, be moved from place to place, and at once used in any situation large enough to contain it. The wear and tear to the machine is very slight, no skilled labour is required to work it, and holes can be bored at any angle to any required depth. The power cylinder is fitted with a piston and tubular rod of steel, which works freely through the long glands at the top and bottom of the cylinder. The top gland contains a cup leather packing round the piston rod, which prevents any escape of air contained in the cylinder. The piston is slightly cupped on its upper surface, and is packed on this surface only with a disc of leather, which is of greater diameter than the cylinder, so that when it is pressed down into the cupped surface of the piston by a nut of proper form, which screws on the piston-rod, its edges turn up against the cylinder, and form a perfectly air-tight joint with the least possible friction.

The top of the tubular piston, above described, is fitted with a lifting block made in three parts, two of which form its body, and one the sleeve, which holds them together; it is made in this way in order to embrace the driving nut, the lower end of which revolves in it as a thrust bearing; this nut is screwed through its entire length of 8 inches to fit the screwed portion of the steel bar, which passes through the centre of the machine, and carries the boring tool at its lower end. The drill bar is screwed for about half its length, and the other or lower half is six-sided, and passes through a cap of similar form at the lower end of the tubular piston-rod, so that it must turn with the piston, while having independent longitudinal motion through its centre; a somewhat similar arrangement admits of the long driving nut, either turning with the drill-bar or stopping on it, while it is always at liberty to travel through the bevel wheel, which gears it with the feeding handle. The requisite motion is given to the drill-rod by two cams on the wheel shaft, and this is effected by men at the winch handle, who can thus readily give 150 to 180 blows per minute, which, of course, far exceed both in number and weight anything that is possible by the usual process of hand drilling.

The machines are mounted on three different kinds of stands suitable for driving, sinking, and open quarry work, and the operation of drilling with them is so simple that we think the following few words will fully explain their action:—The machine having been fixed, and the tool brought to bear on the rock, the wheels are set in motion, and the cams thereby brought in contact with the lifting block, and it, together with the piston and drill bar, is raised 4 in. (the stroke of the machine), and instantly released to give the blow, the force of which can be regulated to suit the power of the two men working the machine. The action of the cams on the lifting block not only raises it, but also turns it a little, and thus gives the tool a new position for the following blow, and at the same time automatically advances the drill, the amount of which feed is regulated by a small brake at the back of the feed handle, which either stops or retards the rotative motion of the long nut on the drill bar. It will be seen, therefore, that the whole force of the blow is developed on the rock, and that at any moment the tool may be rapidly advanced or drawn back by hand, or easily regulated to suit any description of stone.

On Wednesday a series of trials were made for showing the actual capabilities of the machine in the presence of a number of gentlemen interested in the question of mining and quarrying, and satisfactory results were obtained. With machines adapted to give a 100-lb. blow, two men were able to maintain a fairly uniform speed of from 180 to 185 strokes per minute, and making vertical holes the speed of boring was in three separate trials in hard Portland stone 6½ in. per minute, and in a very tough granite an average of 3 in. per minute was attained. In both cases an S shaped drill was employed, and the sizes were in the case of the Portland stone 1½ in. diameter, and in the granite 1½ in. An attempt was made to show the operation of the drill in boring horizontal holes, but as there were no facilities for tightly fixing either the stone or the apparatus, the trial cannot be called a fair one for the drill.

This difficulty, of course, would not occur in the mine, where the apparatus would readily be made fast to the roof and floor, and there would be the solid heading to operate upon. The patentees state that, as a matter of fact, the loss in driving horizontally as compared with making vertical holes seldom exceeds 10 per cent., and never reaches 15 per cent., so that 2½ in. per minute in the granite tested could fairly be relied upon. This machine is being introduced by the Hand-Power Rock Drill Company (Limited), of Queen Victoria-street, and there can be no doubt that for quarrying operations it will be admirable, and its use prove equally advantageous to the workmen and to the employer.

* * * Owing to a pressure on our space, we are compelled to omit "The Week" and "The Scotch Mining Share Market."

COLLIERY MANAGER WANTED.

WANTED, for an extensive COLLIERY in YORKSHIRE, a Gentleman to UNDERTAKE the MANAGEMENT of the WORKING DEPARTMENT of the BUSINESS. He must have a practical knowledge of Mechanical as well as of Mining Engineering. Applicants are requested to state age, salary required, and give references. Address, "Beta," care of Messrs. Pawson and Brailford, Booksellers, Sheffield. All communications will be treated as confidential.

COLLIERY MANAGER.

WANTED, for a LARGE COLLIERY in YORKSHIRE, a COMMERCIAL MANAGER. No one need apply who has not had large experience in the business, and can give the highest references. Address, "A. D.," care of Mr. Watson, Advertising Contractor, No. 74, Fleet-street, E.C.

TO MINING COMPANIES.

WANTED, a MINE MANAGER, of large Foreign and Colonial experience in Gold, Silver, Iron, &c., and Phosphates, desires a SITUATION as MANAGER, or to INSPECT FOREIGN MINING or REDUCTION PROPERTIES. Is thoroughly up in the reduction of the Base Metal Ores of the Pacific Slope, and the erection of the necessary plant. For testimonials and reference, address, in first instance, to "Cosmo," MINING JOURNAL Office, 26, Fleet-street, London, E.C.

WANTED, a CORNISHMAN, at present Resident Manager of a large COPPER MINING and SMELTING ESTABLISHMENT, will be OPEN to a RE-ENGAGEMENT in December. Speaks and writes French and German, and has some knowledge of Spanish. Unexceptionable references. Address, "A. F. C. E.," Elisabetha Goldberger, Oravica, Banat, Hungary.

WANTED, an ENGAGEMENT by a MINING ENGINEER as SUPERINTENDENT or GENERAL MANAGER. Speaks French, Italian, and Spanish. Has had 25 years' experience in Argentiferous Copper and Lead, Bitumen and its products, Sulphur, Silver, and especially Gold Mining. Address, "X. Y.," 34, Spring street, Paddington.

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FOR SALE, a DIPPER WHEEL, 21 feet in diameter. The above is new, and never used. Will be SOLD CHEAP. Also, an excellent 6-ton WELSH BRIDGE. Apply to Capt. Hosking, Wheel Agar, Pool, near Camborne.

WESTMINSTER MINE (LATE LLANARMON), NEAR MOLD.

FOR SALE, the WHOLE of the PLANT, comprising ONE 22 in. PUMPING and WINDING ENGINE, with condensing work, in excellent condition, with TWO BOILERS. The whole of the plant on the mine, which would enable any new company to resume working. The pitwork in three shafts, capstan, wire ropes, &c., &c. To view the same apply to Capt. Wm. CLEMENTS, LLANARMON, near Mold. For price, &c., to H. WADINGTON, 76, Old Broad-street, London.

FOR SALE, a 14-horse power PORTABLE STEAM ENGINE, with link motion reversing gear, also gear to wind and pump. A 26-horse power PORTABLE. An 18-horse power VERTICAL STEAM ENGINE, and a 9½ in. cylinder VERTICAL ENGINE, and combined winding drum. A 6-ft. PAN MORTAR MILL, VERTICAL ENGINE, and BOILER. Apply to—BARROWS and STEWART, ENGINEERS, BARNURBY.

THE LAST CHANCE SILVER MINING COMPANY OF UTAH (LIMITED).

SUBSCRIPTIONS ARE INVITED FOR THREE HUNDRED DEBENTURES at £10 each, balance of 1000 Debentures of £10 each, bearing interest at the rate of 15 per cent. per annum, and being a first charge on the mines and property of the company. Redeemable by half yearly drawings, within five years. The first drawing to take place October 23 next—£3 payable on application; £1 on allotment; and the remaining £4 three months after allotment. According to the latest reports there is now about £50,000 worth of ore proved, the net profits on which will be far more than sufficient to cover the whole amount of the bonds, principal as well as interest, thus making them a perfectly secure investment. Forms of Application, with the copies of the report on the mine, can be obtained at the offices of the company, 26, Great Winchester-street, London, E.C.

The LIST OF APPLICATIONS WILL CLOSE FOR LONDON ON DEC. 1 next, and for the COUNTRY ON DEC. 3 next. By Order, J. BUTLER WILLISON, Secretary.

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CAPTAIN ABRAHAM FRANCIS, MINING AGENT, ENGINEER, AND SURVEYOR, GOSWAM, ABERYSTWYTH.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
Nov. 29—	Tankerville	100	£12 8 6	Panther Lead Company.

Date.	Mines.	Tons.	Price per ton.	Amount.	Purchasers.
Nov. 28—	Wheal Coates	2 6 3 25	£41 5 0	—	Daubuz.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
Nov. 21—	—	—	£31 2 6	Thos. Bolitho and Sons.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
Nov. 21—	—	—	£35 0 0	William Harvey, and Co.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
Nov. 21—	—	—	£37 0 0	Tregoning and Son.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
Nov. 21—	—	—	£34 12 6	ditto

Date.	Mines.	Tons.	Price per ton.	Purchasers.
Nov. 21—	—	—	£26 15 0	Redruth Company.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
Nov. 21—	—	—	£31 2 6	Calenick Company.

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Nov. 21—	—	—	£19 0 0	—

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COAL MINES REGULATION ACT, 1872.

EXAMINATION FOR MANAGERS' CERTIFICATES OF COMPETENCY.
DISTRICT UNDER THE CHARGE OF THOS. E. WALES, Esq.,
H.M. INSPECTOR OF MINES.

NOTICE IS HEREBY GIVEN, that an EXAMINATION for MANAGERS' CERTIFICATES OF COMPETENCY, under the above-named Act, will be HELD on the 8th, 9th, and 10th days of January, 1878, and CANDIDATES INTENDING TO PRESENT THEMSELVES at such Examination must, on or before the 31st day of December next, notify such intention to the Secretary of the Board of the above-mentioned District, from whom all information as to particulars can be obtained.
By order of the Board,
CHAS. H. JAMES, Secretary,
8, Courtland-terrace, Merthyr Tydfil.
N.B.—Persons who do not reside within the District are equally eligible for examination with those who do.

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Terms on application to the Principal, Burbank College, West Hartlepool.

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Assays or Complete Analyses made of Copper, Silver, Lead, Zinc, Tin, and other Ores.
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PUBLIC ANALYST for the County of Cornwall and Borough of Penzance,
UNDERTAKES THE ANALYSIS of all articles of FOOD, DRINK, DRUGS,
MINERALS, MANURES, SOILS, or COMMERCIAL PRODUCTS. Also the
INSPECTION OF MINERAL PROPERTIES.
Private Instruction given in Practical Chemistry, Mineralogy, or Geology.
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ENGINES ON SALE—a Bargain.
Apply.—SUN FOUNDRY, LEEDS.

TWENTY-FIVE H.P. PORTABLE ENGINE, almost new, FOR
SALE OR HIRE, or on hire with option of purchase, on
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ENGINES, BOILERS, AND COLLIERY PLANT, of every de-
scription, new and secondhand, always in stock.
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Purchaser of Borate of Lime and Tincal.

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STEPHEN HARTER begs to inform the Trade that he has the following arti-
cles for sale:—
REFINED METALLIC NICKEL.
REFINED METALLIC BISMUTH.
OXIDE OF COBALT.
GERMAN SILVER—IN INGOTS, SHEET, WIRE, &c.
NICKEL AND COBALT ORES PURCHASED.

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Capital £20,000, in 2000 Shares of £10 each,
Of which 800 are taken by the vendor, and 600 subscribed privately,
leaving only 600 to be offered for subscription.
Deposit on application, £1 per share; payment on allotment,
£4 per share, and £2 10s. in two months.
The remaining £2 10s. will not, it is believed, be required
to be paid up.
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Lieutenant-Colonel OMMANNEY, J.P.
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MESSRS. COCKS, BIDDULPH, AND CO., 43, Charing Cross, S.W.

The company is formed for purchasing and working a valuable Tin Mining
property in Bohemia.
The mine was most favourably reported on some years since by the late EVAN
REYNOLDS, Esq., F.G.S., and Capt. JOSHUA THOMAS, of the Dolcoath Mine, and as
recently as in July last by Capt. J. MAYNARD, of the East Pool Mine, who found
extraordinarily rich for tin of most remarkable purity. According to his op-
inion the working even for the first year will produce to the shareholders profits
of over 100 per cent.
The terms on which the purchase has been made are highly advantageous, as
more than two thirds of the purchase money is dependent on the success of the
working.
Prospectuses, containing full particulars, with a copy of Capt. MAYNARD'S
report, and Form of Application for Shares, may be obtained by applying, per-
sonally or by letter, to the Secretary, at the offices of the company—
26, CANADA BUILDINGS, KING STREET, WESTMINSTER.

THE SHARE LIST CLOSES ON THE 15TH OF DECEMBER.

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ASSAYER AND ANALYTICAL CHEMIST,
SWANSEA.

In the Court of the Vice-Warden of the Stannaries.
Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACTS, 1862 and 1867, and
of the CHARLOTTE UNITED MINES (LIMITED).—By an Order, made
by His Honor the Vice-Warden of the Stannaries in the said Matter, dated this
day, on the Petition of John Reynolds, Philip Tonkin, James Williams, Joseph
Carverth, James Tonkin, and James Tregellas, all of the parish of St. Agnes, within
the said Stannaries, working miners (working as John Reynolds and party), and of
Francis Mitchell, of the same parish, mine engine driver, claiming to be creditors
of the said company, IT WAS ORDERED that the said Charlotte United Mines
(Limited) should be WOUND-UP by this Court, under the provisions of the
Companies Act, 1862.

HODGE, HOCKIN, AND MARRACK, Truro
(Solicitors for the said Petitioners).

Dated Truro, November 23rd, 1877.

In the Court of the Vice-Warden of the Stannaries.
Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACTS, 1862 and 1867, and
of the CHARLOTTE UNITED MINES (LIMITED).—The Vice-Warden
has, by an Order made in the above Matter, bearing date this day, APPOINTED
JOHN HENRY HAMLEY, of Truro, within the said Stannaries, an Officer of
the said Court, to be absolutely the OFFICIAL LIQUIDATOR of the ABOVE-
NAMED COMPANY.
FREDERICK MARSHALL, Registrar.
Dated Registrar's Office, Truro, Nov. 23, 1877.

In the Court of the Vice-Warden of the Stannaries.
Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACTS, 1862 and 1867, and
of the CHARLOTTE UNITED MINES (LIMITED).—Notice is hereby
given, that ALL CREDITORS of the ABOVE-NAMED COMPANY are re-
quired, on or before the 8th day of December next, to SEND IN THEIR NAMES
AND ADDRESSES, and the AMOUNTS and PARTICULARS of their SEVERAL
CLAIMS, to JOHN HENRY HAMLEY, the Official Liquidator of the said company,
at the Stannaries Court Office, in Truro, within the said Stannaries.
FREDERICK MARSHALL, Registrar.
Dated Registrar's Office, Truro, Nov. 23, 1877.

In the Court of the Vice-Warden of the Stannaries.
Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACTS, 1862 and 1867, and
of the EAST ROCKS HEMATITE IRON ORE COMPANY (LIMITED).—By an Order, made
by His Honor the Vice-Warden of the Stannaries, in the said
Matter, dated this day, on the petition of William Arundel Oatey and John
Martyn, carrying on business at Wadebridge, within the said Stannaries, as
General Merchants, under the style of "Oatey and Martyn," claiming to be cre-
ditors of the said company, IT WAS ORDERED that the said EAST ROCKS
HEMATITE IRON ORE COMPANY (LIMITED) should be WOUND-UP by
the Court under the provisions of the Companies Act, 1862.

HODGE, HOCKIN, AND MARRACK, Truro.
(Solicitors for the said Petitioners.)

Dated Truro, November 24th, 1877.

In the Court of the Vice-Warden of the Stannaries.
Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACTS, 1862 and 1867, and of
the EAST ROCKS HEMATITE IRON ORE COMPANY (LIMITED).—The Vice-Warden
has, by an Order made in the above Matter, bearing date this day, appointed JOHN
HENRY HAMLEY, of Truro, within the said Stannaries, an Officer of the said Court,
to be absolutely the OFFICIAL LIQUIDATOR of the above-named company.
FREDERICK MARSHALL, Registrar.
Dated Registrar's Office, Truro, this 24th day of November, 1877.

In the Court of the Vice-Warden of the Stannaries.
Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACTS, 1862 and 1867, and of
the EAST ROCKS HEMATITE IRON ORE COMPANY (LIMITED).—Notice is hereby
given, that ALL CREDITORS of the above-named company are required, on or before
the 8th day of December next, to SEND IN THEIR NAMES AND ADDRESSES, and the
AMOUNTS and PARTICULARS of their SEVERAL CLAIMS, to JOHN HENRY HAMLEY,
the Official Liquidator of the said company, at the Stannaries Court Office, in Truro,
within the said Stannaries.
FREDERICK MARSHALL, Registrar.
Dated Registrar's Office, Truro, this 24th day of November, 1877.

RE THOMAS STOKOE, DECEASED.

SALE OF ONE THOUSAND EIGHT HUNDRED AND FIFTY SHARES IN
THE LONDON AND SOUTH WALES COAL COMPANY (LIMITED).

MR. SIMEON JOEL is instructed by the Executors TO SELL,
BY AUCTION, at his Sale Rooms, Pilgrim-street, Newcastle-upon-Tyne,
on Wednesday, the 5th of December, 1877, at Twelve o'clock at noon, prompt,
ALL THOSE ONE THOUSAND EIGHT HUNDRED AND FIFTY £10 shares,
Nos. 7851 to 8850 inclusive, and 31,901 to 32,750 inclusive, in the

LONDON AND SOUTH WALES COAL COMPANY
(LIMITED).

£9 12s. 6d. has been paid upon each of these shares.

The shares will be offered in lots of fifty and upwards, as may be determined at
the time of sale.

For further particulars and conditions of sale, apply to Mr. JOHN FLEMING,
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LEAD MINES COMPANY (LIMITED).

THE LIQUIDATORS of this COMPANY are PREPARED to
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Of the above MINES, situate at HOLYWELL, FLINTSHIRE.
The properties may be viewed on application to the Rev. DAVID JONES, Bryn-
ford Rectory, Holywell, from whom also further information may be obtained;
or from the Liquidators, 20, Colmore-row, Birmingham.

Tenders, addressed to the Liquidators as above, to be sent in before the 31st of
December next. For Self and Co., Liquidators,
20, Colmore-row, Birmingham, November 23, 1877. A. C. COX.

SOUTH WALES.

THE NANT-Y-GLO COMPANY are desirous of LETTING the
following VERY VALUABLE STEAM COAL COLLIERIES:—
The GRIFFIN PIT, at which new winding machinery has lately been erected
at a very large outlay. This pit is situated on the Monmouthshire Railway, and
has every appliance for turning out 400 tons of coal per day.

Also, the HENWAY PIT, capable of turning out from 300 to 400 tons a day.
The above COLLIERIES are now in ACTIVE OPERATION, and are working the
ELLED BIG VEIN and THREE-QUARTER SEAMS of COAL.
THE NANT-Y-GLO COMPANY have VARIOUS OTHER COLLIERIES in
OPERATION and TRACTS of UNWON MINERALS TO BE LET. Various
sinkings around the property have proved the minerals.

They adjoin the property of the Ebbw Vale Steel, Iron, and Coal Company
(Limited), Messrs. J. G. and W. Barnes, of Liverpool, the Blaenavon Iron and
Steel Company (Limited), and the South Wales Colliery Company (Limited).
Trucks and all other plant may be obtained either by purchase or on simple hire.
For particulars, apply to WILLIAM ADAMS, of Cardiff, the Consulting Engineer
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chester; and to Messrs. COLBORNE and WARD, Solicitors, Newport, Mon.

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ONE 40 in. PUMPING ENGINE, 9 ft. stroke, with TWO 11 ton BOILERS
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ONE 30 in. STAMPING ENGINE, 9 ft. and 8 ft. stroke, with TWO BOILERS,
19 tons, two fly wheels and wrought-iron shafts, two stamp axes for 32 heads,
with heads, lifters, &c.
ONE 23 in. WINDING ENGINE, double acting, 8 ft. stroke, with TWO
BOILERS, 10 tons and 8 tons, and whim cage.

ONE 20 in. "MAN ENGINE," double acting, 6 ft. stroke, one fly wheel, two
wrought-iron shafts, and ONE 9 ton BOILER and FITTINGS, balance bob, &c.
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Including PUMPS of various sizes.
Particulars in an inventory thereof, which may be seen on the mine.
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Mr. EDWARD TRYTHALL, the Purser, Penzance.
Dated 15th November, 1877.



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at real value; offers his assistance for securing undeveloped mining properties at
home prices. As to care taken in reporting, reference is made to the Mining Journal
Supplement, April 1, 1876, containing report on property of the Maxwell Land
Grant and Railway Company; as to technical standing, to the prominent men of
the trade—compare Mining Journal of Aug. 30 and Nov. 31, 1872, and New York
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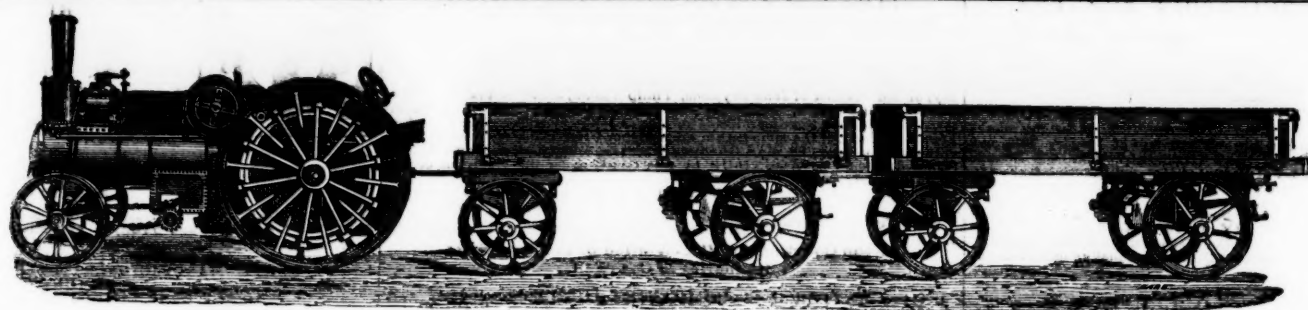
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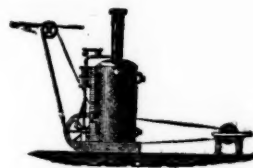
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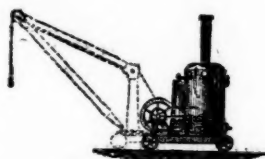
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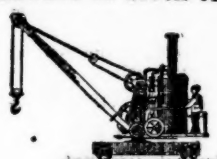
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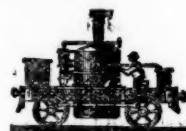
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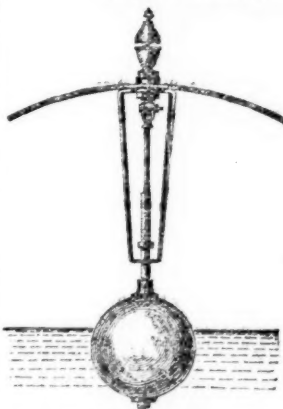
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 can prevent the opening for the steam to act directly upon the instrument and cause the alarm.

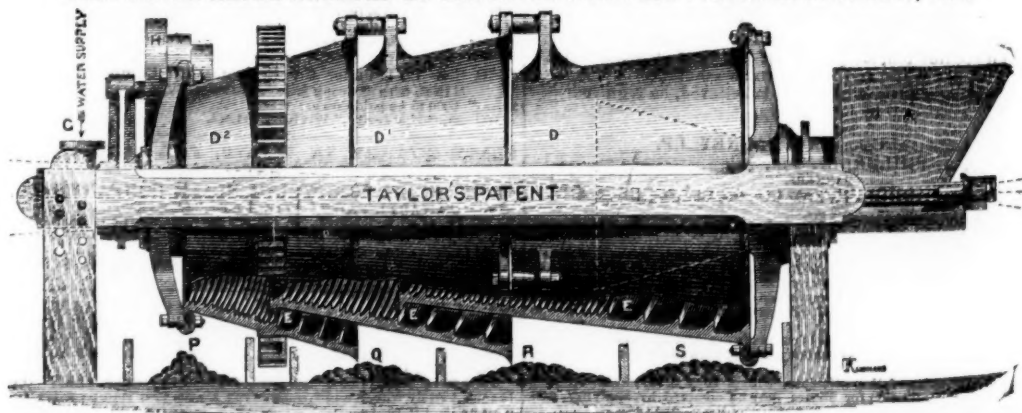
The hollow cast-iron float is made sufficiently heavy that, on falling with the water, it cannot
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 sufficiency of water in the boiler, the alarm valve is kept close against its seat by the float.

A loose pin at the top of the whistle enables anyone to test the alarm at a moment's notice.
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 distance from top of flue to top of boiler, or send sketch.

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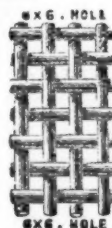
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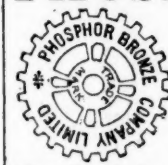


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